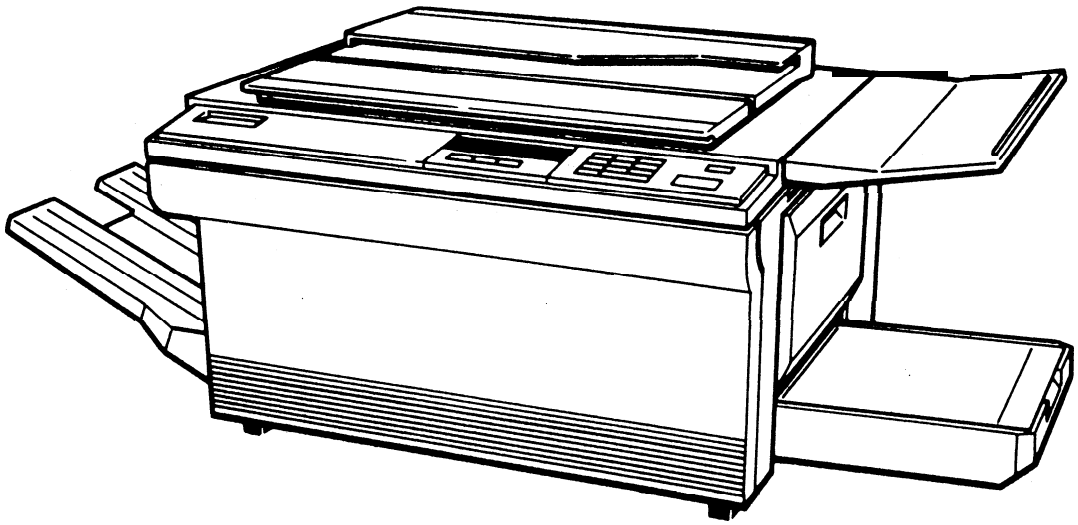
RICOH

FT3320

SERVICE TRAINING MANUAL



RICOH COMPANY, LTD.

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SECTION 1

OVERALL MACHINE INFORMATION

SPECIFICATIONS

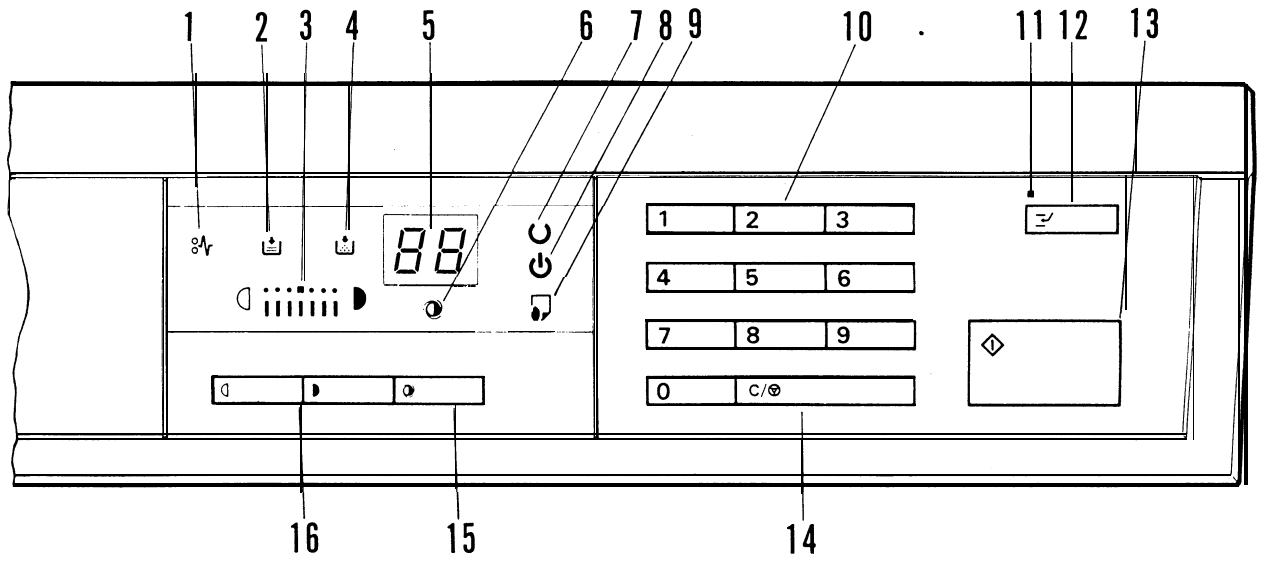
Configuration:	Desk top (fixed platen)
Copying Process:	Dry electrostatic transfer system
Original:	Book/sheet
Original Size:	Maximum: A4/811z" x 14"
Copy Paper Size:	Maximum: A4/8vz" x 14" Minimum: A6/5112° x 81I2"
Copy Paper Weight:	52 to 128 grams (14 lb to 34 lb)
Reproduction Ratio:	1 : 1
Copying Speed:	12 copies/minute (A4/81/2° x 1 1") 10 copies/minute (81/2" x 14")
First Copy Time:	9 seconds (A4/8vz" x 11")
Warm-up Time:	Approximately 35 seconds (room temp. 20 C/68 F)
Copy Number Input:	Numeral keys, 1 to 99
Manual Image Density Selection:	7 steps (development bias variable)
Automatic Reset:	60 seconds. Quantity entered returns to "1". Manual image density mode returns to Auto ID mode. Interrupt mode returns to the previous mode.
Paper Feed System:	Feed and reverse roller. Cassette feed, 250 sheets. Manual feed, 50 sheets.
Exposure System:	Slit exposure, moving optics
Lens:	Through lens, F10, f= 180 mm
Light Source:	Halogen lamp: 97 v, 300 w (115V) 180 V, 350 W (220/240V)

Photoconductor:	Selenium drum (H type)
Charge System:	Single wire dc corona
Development System:	Magnetic brush roller
Toner Density Control:	Automatic (photosensor)
Development Bias System:	Pulse width modulation switching
Toner Replenishment:	Cartridge exchange (200 g/cartridge)
Toner Consumption:	Approximately 4,500 copies/cartridge (A4, 7% original)
Cleaning System:	Blade and brush
Quenching System:	Photo quenching (neon lamp)
Image Transfer:	Single wire dc corona, pre-transfer lamp
Paper Separation:	Single wire ac corona and pick-off pawls
Image Fusing:	Heat and pressure rollers
Fusing Lamp:	Halogen lamp (850 W)
Electronic Control System:	Microprocessor
Copy Tray Capacity:	100 sheets (standard copy paper)
Self-diagnostics:	8 codes, displayed in the copy counter
Power Source:	110 V/60 Hz . . . .I2 A **115 V/60 Hz . . . .I2 A** **220 V/50 Hz . . . . . 6 A** **240 V/50 Hz . . . . . 6 A** **220 V/60 Hz . . . . . 6 A**
Average Power Consumption:	Warm-up: 0.89 kW Stand-by: 0.15 kW Copying: 0.66 kW **(A4)** Max: 1.3 kW (110 V/l 15 V/220 V) 1.4 kW (240 V)

Dimensions (WXDXH):	580 x 495 x 320 mm 22.8 x 19.5 x 12.6 inches
Weight:	38 kg (83.8 lb)
Optional Equipment:	Key counter Additional Cassette Original Table

OPERATION PANEL

- A4 Version -



1. Check Paper Path Indicator
Indicates that a misfeed has occurred within the copier.

2. Load Paper Indicator
Lights when no paper is in the cassette or the manual feed table

3. Manual ID Indicators
Show the manually selected image density.

4. **Add Toner Indicator**
Lights when it is time to change the toner cartridge. When continuously lit, the copier cannot be used until a new cartridge is installed.

5. **Copy Counter**
Displays the number of copies entered. While copying, it shows the number of copies made.

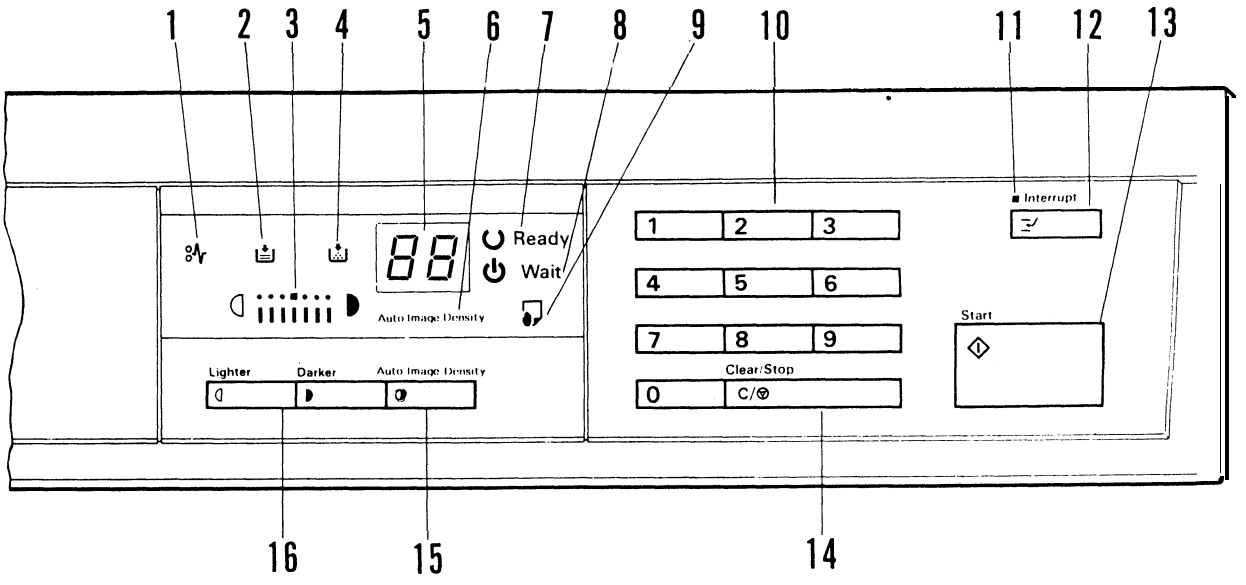
6. **Auto Image Density Indicator**
Lights when the copier is automatically controlling image density.

7. **Ready Indicator**
Lights when the machine is ready to-make copies.

8. Wait Indicator
Indicates that the machine is not ready to copy.

9. **Manual Feed Indicator**
Lights when the manual feed table is open.

- Letter Version -



10. Number Keys
The number keys are used to enter the desired number of copies.

11. Interrupt Indicator
Lights when interrupt mode is selected. Also lights when the manual feed table is open.

12. Interrupt Key
Press to make interrupt copies during a copy run.

13. Start Key
Press to start operation.

14. **Clear/Stop Key**
Press to cancel the copy number entered. While copying, press to stop copy operation.

15. Auto Image Density Key
Press to select/deselect automatic image density mode.

16. **Manual Image Density Keys**
Press to make copies lighter or darker. Use these keys to cancel automatic control and manually select the image density level.

Note: The Manual Image Density indicator or the Auto Image Density indicator will start blinking if the ID sensor's input becomes abnormal.

COPY PROCESS

1. DRUM CHARGE
In the dark, the charge corona unit gives a uniform positive charge to the selenium drum. The charge remains on the surface of the drum because the photoconductive selenium has high electrical resistance in the dark.

2. EXPOSURE
An image of the original is reflected to the selenium drum surface via the optics assembly. The charge on the drum surface is dissipated in direct proportion to the intensity of the reflected light, thus producing an electrical latent image on the drum surface.

3. DEVELOPMENT
Negatively charged toner is attracted to the positively charged areas of the drum, thus developing the latent image. (The negative triboelectric charge is caused by friction between the carrier and toner particles.)

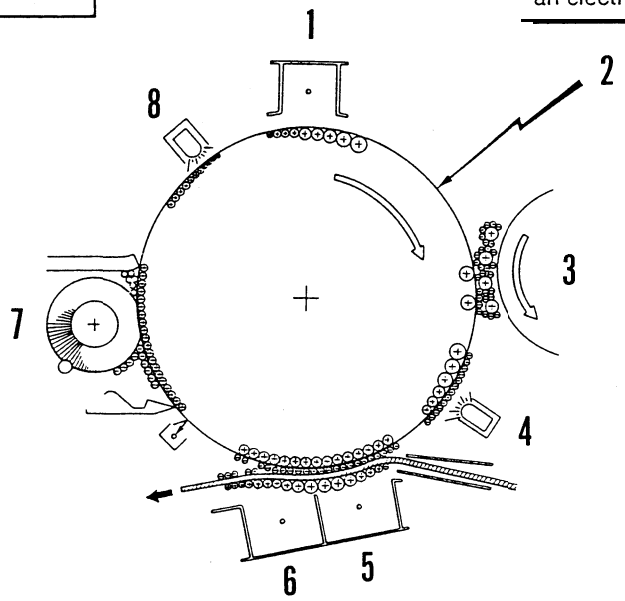
4. PRE-TRANSFER LAMP (PTL)
The PTL illuminates the drum to remove all positive charge from the exposed areas of the drum. This prevents the toner particles from being reattracted to the drum surface during paper separation and makes paper separation easier.

5. IMAGE TRANSFER
Paper is fed to the drum surface at the proper time so as to align the copy paper and the developed image on the drum surface. Then, a strong positive charge is applied to the back side of the copy paper, providing an electrical force which pulls the toner particles from the drum surface to the copy paper. At the same time, the copy paper is electrically attracted to the drum surface.

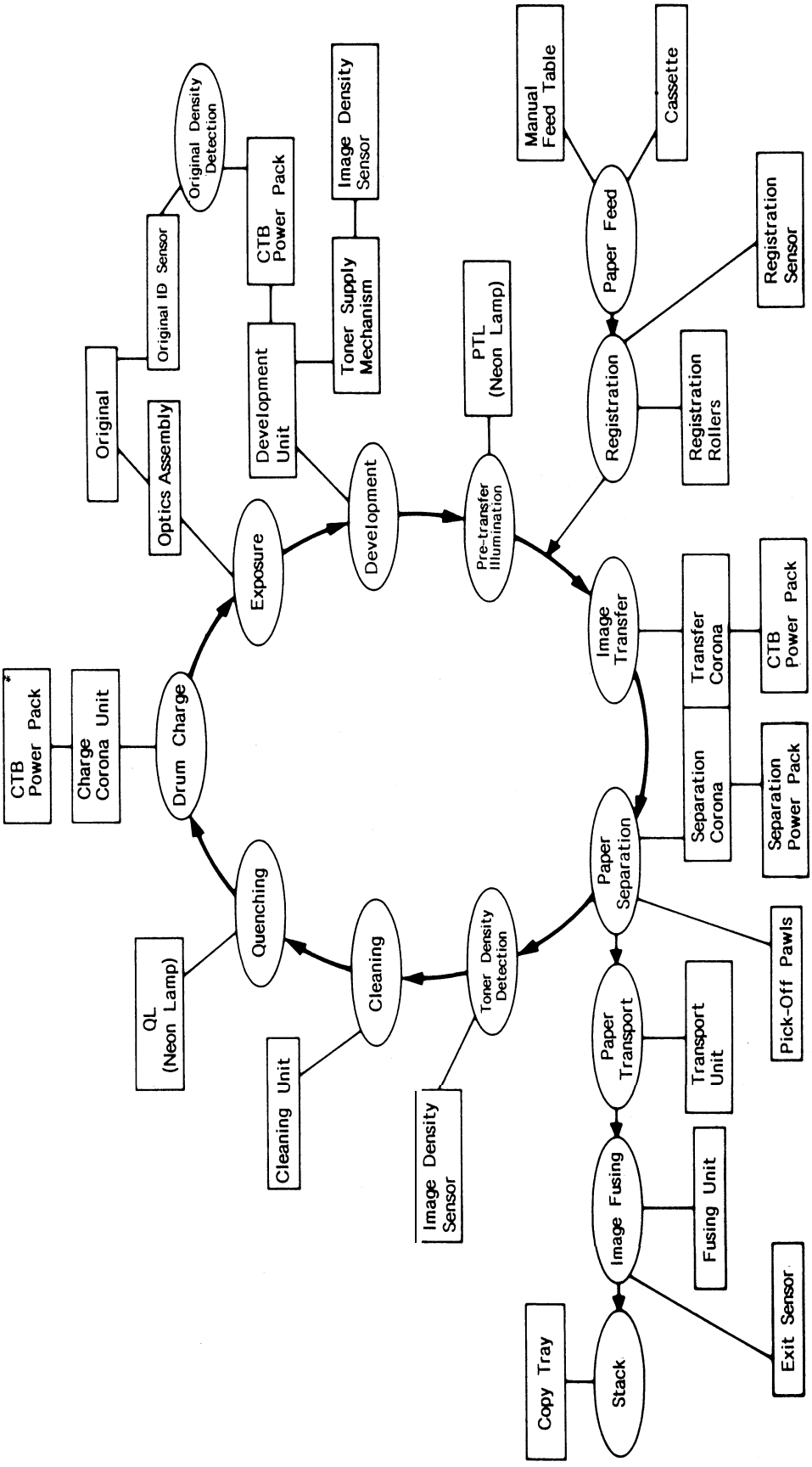
6. PAPER SEPARATION
A strong ac corona discharge is applied to the back side of the copy paper, reducing the positive charge on the copy paper and breaking the electrical attraction between the paper and the drum. Then, the stiffness of the copy paper causes it to separate from the drum surface. The pick-off pawls help to separate paper which has low stiffness.

7. CLEANING
The cleaning brush removes part of the toner on the drum and loosens the remainder. The cleaning blade then scrapes off the loosened toner.

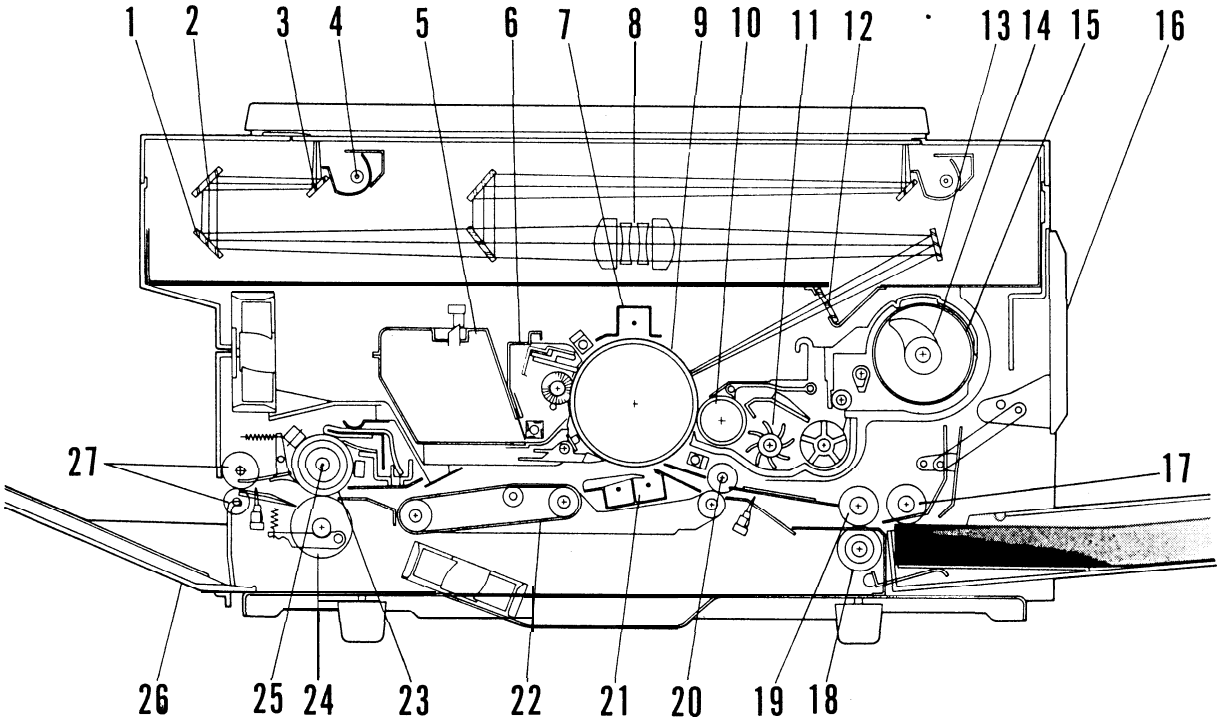
8. QUENCHING
The light from the Neon Lamp electrically neutralizes the surface of the selenium drum.



FUNCTIONAL OPERATION

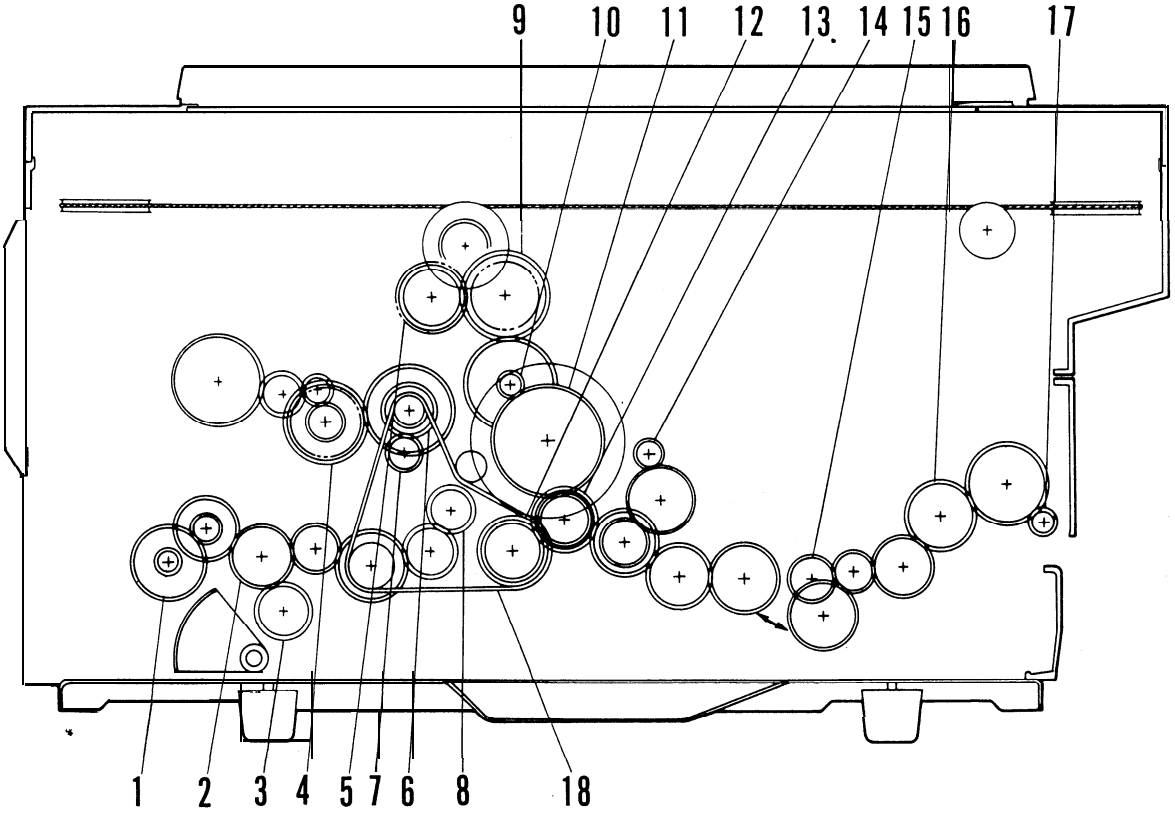


MECHANICAL COMPONENT LAYOUT



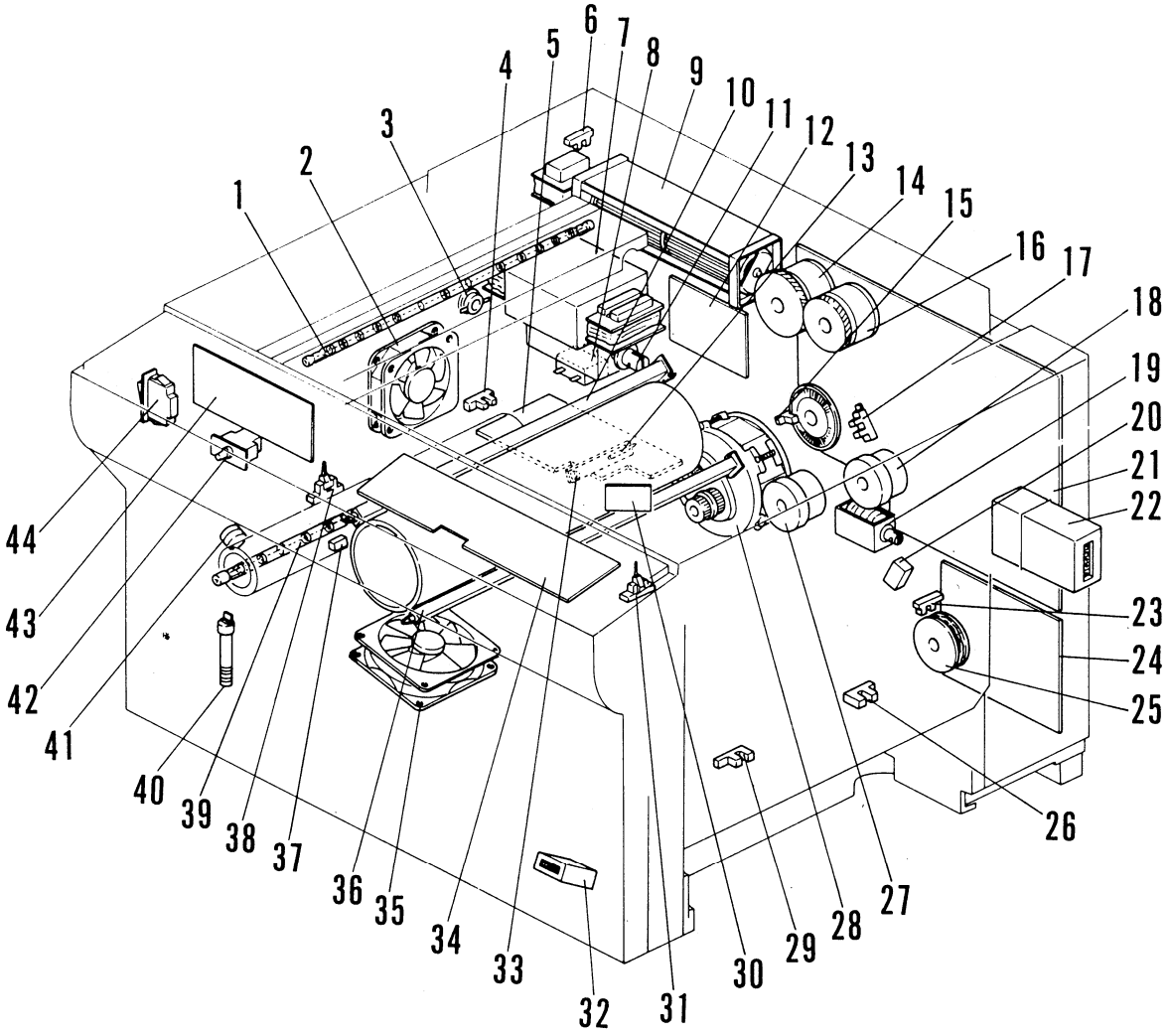
1. Third Mirror
2. Second Mirror
3. First Mirror
4. Exposure Lamp
5. Used Toner Tank
6. Cleaning Unit
7. Charge Corona Unit
8. Lens
9. Selenium Drum
10. Development Roller
11. Paddle Roller
12. Toner Shield Glass
13. Fourth Mirror
14. Toner Agitator
15. Toner Cartridge
16. Manual Feed Table
17. Pick-up Roller
18. Reverse Roller
19. Feed Roller
20. Registration Roller
21. T/S Corona Unit
22. Transport Belt
23. Hot Roller
24. Pressure Roller
25. Fusing Lamp
26. Copy Tray
27. Exit Rollers

DRIVE LAYOUT



1 Paper Lift Drive Gear
2 Paper Feed Drive Gear
3 Reverse Roller Drive Gear
4 Toner Supply Clutch Drive Gear
5 Reverse Clutch Drive Gear
6 Development Roller Drive Gear
7 Development Roller Gear
8 Registration Clutch Gear
9 Forward Clutch Drive Gear
10 Optics Drive Gear
11 Drum Gear
12 Main Motor Gear
13 Drum Drive Gear
14 Cleaning Brush Gear
15 Transport Belt Drive Gear
16 Rear Hot Roller Gear
17 Upper Exit Roller Gear
18 Timing Belt

ELECTRICAL COMPONENT LAYOUT



1. Exposure Lamp - L2
2. Exhaust Blower - M4
3. Optics Thermoswitch - TS2
4. Toner Overflow Sensor - S9
5. Separation Power Pack - PI
6. Scanner Home Position Sensor - S8
7. Transformer - TRI
8. Main Motor Capacitor - C
9. Optics Cooling Fan - M2
10. Quenching Lamp - LI
11. Cleaning Solenoid - SOL2
12. AC Drive PCB - PCB3
13. Drum Thermistor - TH2
14. Forward Clutch - MCI
15. Pulse Generator Sensor - S1
16. Reverse Clutch - MC2
17. Toner End Sensor - S2
18. Toner Supply Clutch - MC4
19. Paper Feed Solenoid - SOLI
20. Development Set Switch - SW3
21. Main PCB - PCBI
22. Key Counter - C02 (Option)
23. Manual Feed Sensor - S3
24. CTB Power Pack - P2
25. Paper Lift Clutch - MC5
26. Paper Lift Sensor - S11
27. Registration Clutch - MC3
28. Main Motor - Ml
29. Paper End Sensor - S5
30. Original ID Sensor - S12
31. Registration Sensor - S6
32. Total Counter - COI
33. Image Density Sensor - S4
34. Operation Panel PCB - PCB4
35. Vacuum Fan - M3
36. Pre-Transfer Lamp - L3
37. Fusing Thermistor - TH1
38. Paper Exit Sensor - S7
39. Fusing Lamp - L4
40. Oil End Sensor - S10
41. Fusing Thermoswitch - TSI
42. Door Switch - SW2
43. Lamp Control PCB - PCB2
44. Main Switch - SWI

ELECTRICAL COMPONENT DESCRIPTIONS

SYMBOL	NAME	FUNCTION	LOCATION
Motors			
MI	Main Motor	Drives all main unit components' except fans and blower.	28
M2	Optics Cooling Fan	Keeps the optics cavity cool.	9
M3	Vacuum Fan	Provides suction so that paper is held firmly on the transport belts.	35
M4	Exhaust Blower	Removes heat from around the fusing unit.	2
Magnetic Clutches			
MCI	Forward Clutch	Drives the scanner forward.	14
MC2	Reverse Clutch	Returns the scanner to the home position.	16
MC3	Registration Clutch	Drives the registration rollers.	27
MC4	Toner Supply Clutch	Supplies toner to the development unit.	18
MC5	Paper Lift Clutch	Lifts the cassette bottom plate.	25
Solenoids			
SOL1	Paper Feed Solenoid	Feeds paper from the cassette.	19
SOL2	Cleaning Solenoid	Moves the cleaning blade against the drum.	11
Switches			
SwI	Main Switch	Supplies power to the copier.	44
SW2	Door Switch	Cuts power to ac components when the door is open.	42
SW3	Development Set Switch	Senses whether or not the development unit is properly set.	**20**
Sensors			
S1	Pulse Generator Sensor	Supplies timing pulses to the main PCB.	15
S2	Toner End Sensor	Detects when it is time to add toner.	17
S3	Manual Feed Sensor	Detects when the manual feed table is open.	23
S4	Image Density Sensor	Senses the copy image density.	33
S5	Paper End Sensor	Informs the CPU when the cassette runs out of paper.	29

S6	Registration Sensor	Misfeed detector; also sets operation timing.	31
S7	Paper Exit Sensor	Misfeed detector.	38
S8	Scanner Home Position Sensor	Informs the CPU when the scanner is at the home position.	6
S9	Toner Overflow Sensor	Detects when the used toner tank is full.	4
SIo	Oil End Sensor	Detects when the oil level is low.	40
SII	Paper Lift Sensor	Determines when the paper has reached the correct **feed position.**	26
S12	Original ID Sensor	**Senses the** background density of the original document.	30

Printed Circuit Boards

PCB1	**Main PCB**	Controls all copier functions both directly and through other PCBS.	21
PCB2	Lamp Control PCB	Maintains stable lamp output.	43
PCB3	AC Drive PCB	Drives the main motor, optics cooling fan, and the neon lamps.	12
PCB4	Operation Panel PCB	The operator controls the machine through this **board.**	34

Lamps

L1	Quenching Lamp	Neutralizes any charge remaining on the drum surface after cleaning.	10
L2	Exposure Lamp	Exposes the original with high intensity light.	1
L3	Pre-Transfer Lamp	Reduces charge on the drum surface before transfer.	36
L4	Fusing Lamp	Heats the fusing unit.	39

Power Packs

P1	Separation Power Pack	Provides ac voltage for the separation corona.	5
P2	CTB Power Pack	Provides high voltage power for the charge corona, transfer corona, and the development roller bias.	24

Counters

C0l	Total Counter	**Keeps track of the total number of** copies made.	32
C02	Key Counter	Prevents the use of the copier until installed. Keeps a separate count of copies for administrative purposes. (Option)	22

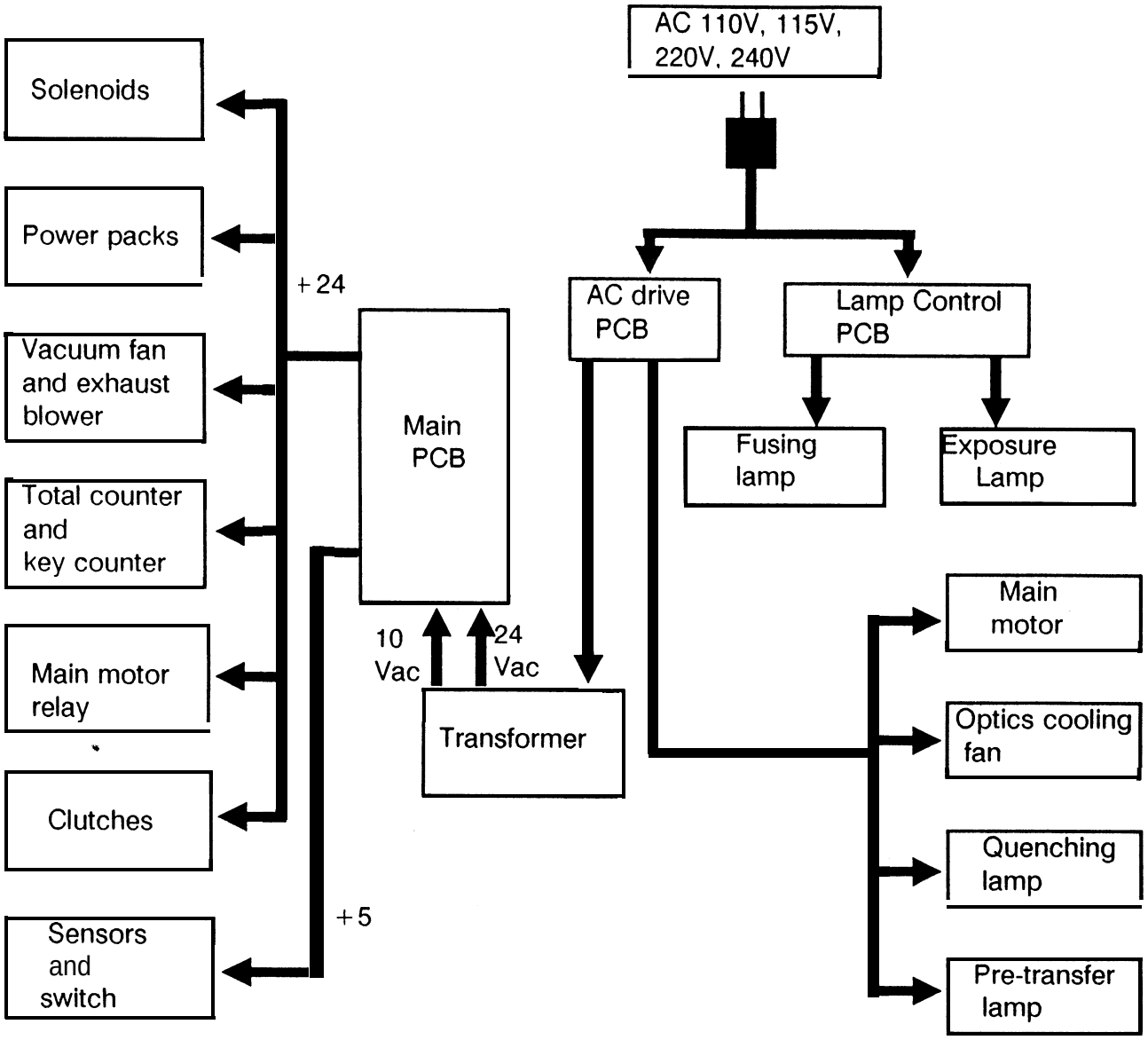
Thermistors

TH1	Fusing Thermistor	Keeps track of the hot roller temperature.	37
TH2	Drum Thermistor	Keeps track of the drum temperature.	13

Others

C	Main Motor Capacitor	Start capacitor.	8
TRI	Transformer	Steps down the wall voltage to 24 Vac and 10 Vat.	7
TS1	Fusing Thermoswitch	Cuts power for the fusing lamp at 220°c.	41
TS2	Optics Thermoswitch	Cuts power for the exposure lamp at 130°c.	3

AC AND DC POWER DISTRIBUTION



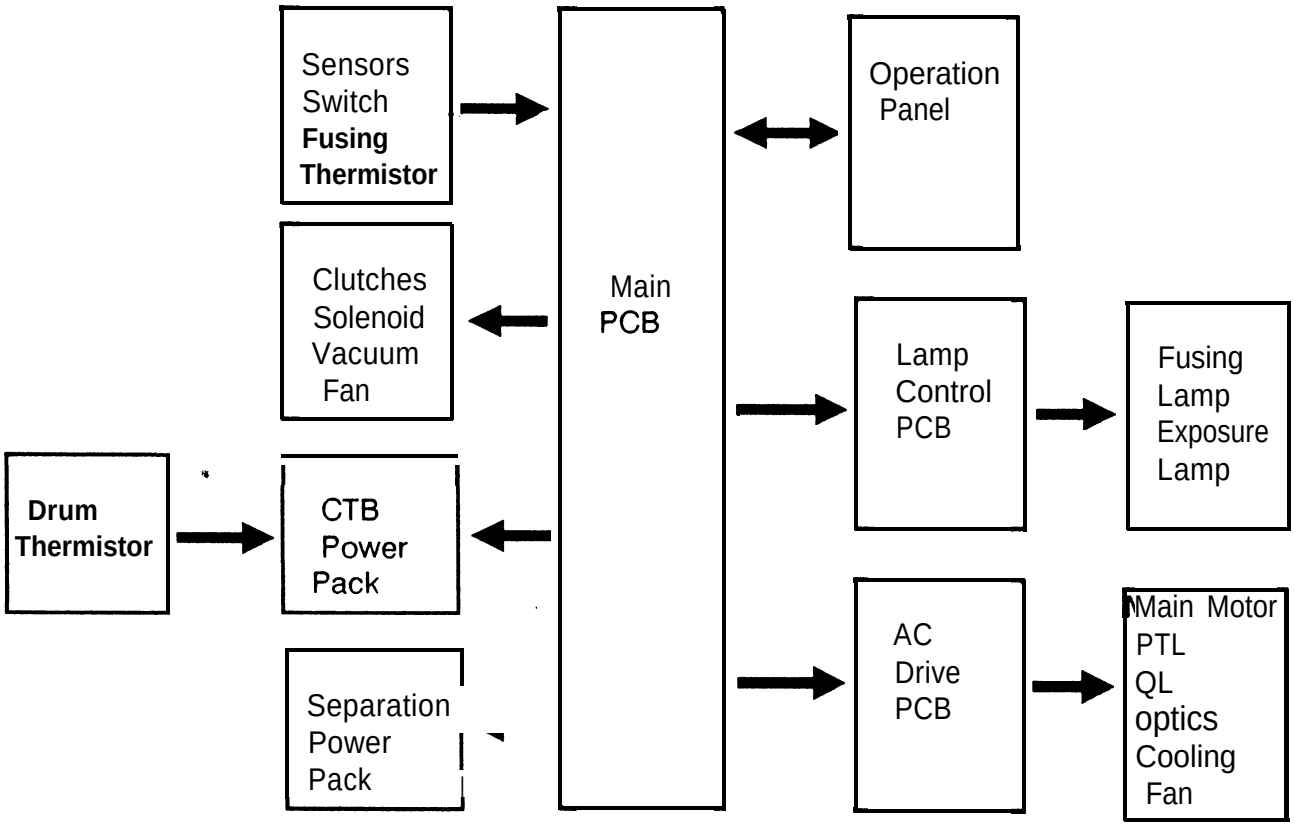
Power is distributed in the copier as shown, in the above illustration.

Direct ac power drives all ac components in the copier. Power from the wall outlet goes directly to the ac drive PCB and the lamp control PCB. The ac drive PCB sends ac power to the main motor, the optics cooling fan, the quenching lamp, and the pre-transfer lamp (PTL). The lamp control PCB powers the fusing lamp and the exposure lamp.

The transformer receives wall voltage ac input from the ac drive PCB and outputs 24 volts ac and 10 volts ac to the main PCB. The main PCB has dc power circuits that convert the ac input voltages to +24 volts and + 5 volts. All sensors and the development set switch operate on + 5 volts. All other dc components operate on +24 volts.

OVERALL MACHINE CONTROL

The following block diagram shows the direction of control signal flow within the copier.



SECTION 2*

DETAILED SECTION DESCRIPTIONS

DRUM

1. SELENIUM DRUM

Selenium has the characteristics of:

- Being able to accept a high positive electrical charge in the dark. (The electrical resistance of selenium is high in the absence of light.)
- Dissipating the electrical charge when exposed to light. (The conductivity of selenium is greatly enhanced by exposure to light.)
- Losing electrical charge in direct proportion to the intensity of the light. That is, where stronger light is directed to the selenium surface, a smaller voltage remains on the selenium.

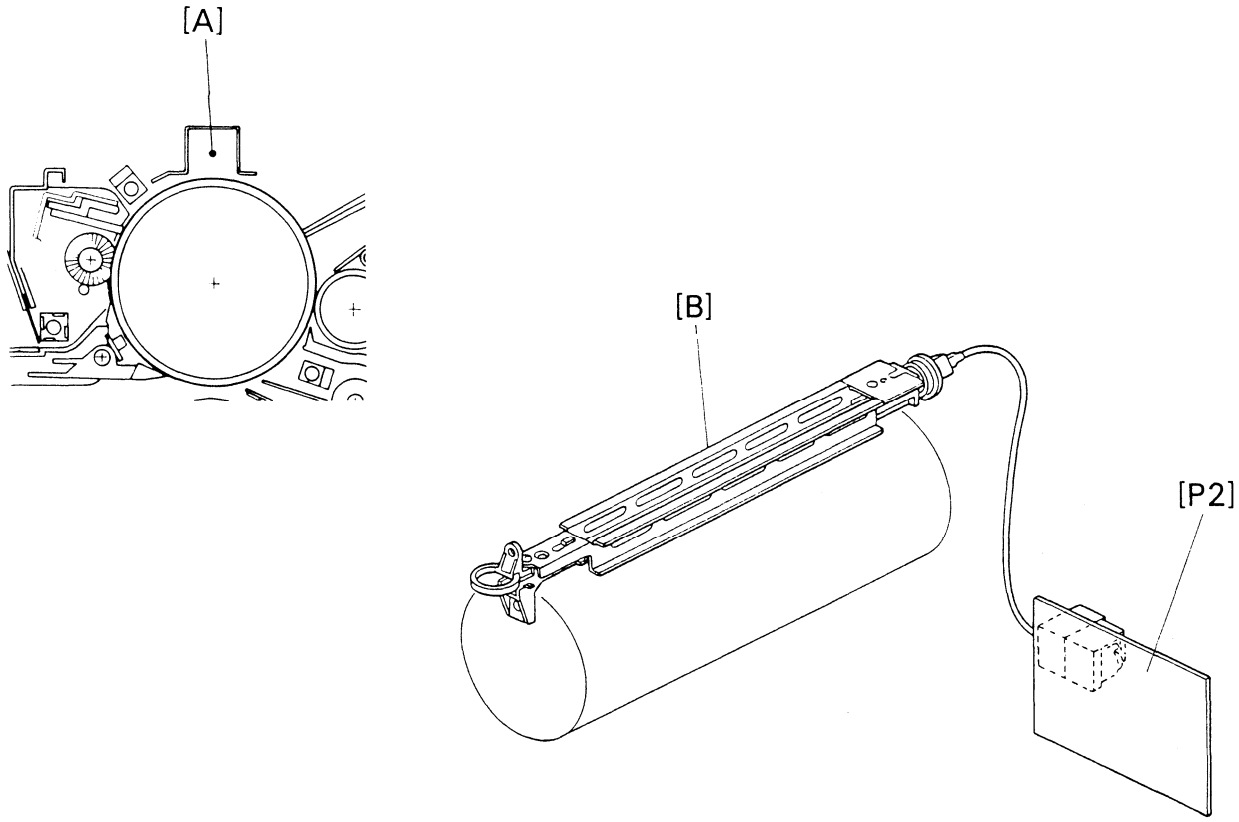
The sensitivity of selenium changes slightly with variations in the surface temperature of the drum. (Under cool conditions, the drum may be excessively charged, this will result in background or excessive image density.) To prevent this, the change corona current accordingly changes to compensate for temperature variations around the drum.

2. HANDLING THE DRUM

- Never touch the drum surface with bare hands.
- Store the drum in a cool dry place away from heat.
- When cleaning the drum, always use a pair of gloves. Do not throw away cotton or other material used for cleaning. Bring it back to the service depot for disposal according to local regulations.
- Always prime the drum with setting powder after cleaning the drum, and when installing a new drum. This should be done within one minute in a location not exposed to strong light.
- To protect the drum, always apply setting powder to a new cleaning blade and/or a new cleaning brush before installing it.

DRUM CHARGE

1. OVERVIEW

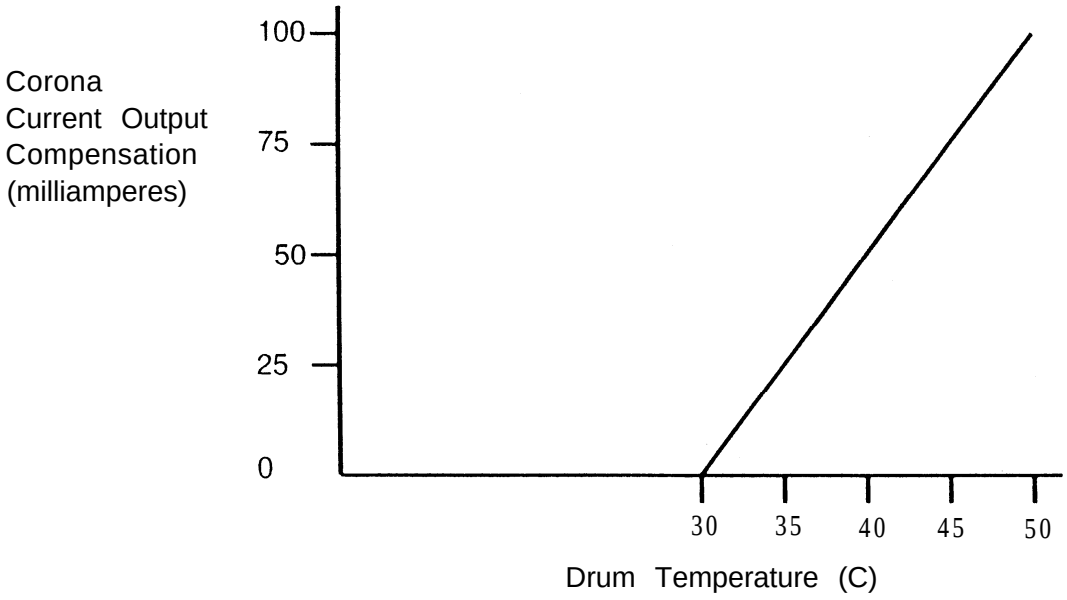


This copier uses a single wire corotron [A] and a selenium drum. The corona wire generates a corona of positive ions when a high positive voltage (+5.4 kilovolts) is applied by the CTB power pack [P2]. The selenium coating receives a uniform positive charge (approximately 850 volts) as it rotates past the corona unit [B].

The exhaust blower, located at the copy exit, causes a flow of air from the upper area of the development unit through the charge corona unit. This prevents uneven build-up of positive ions. An uneven build-up of positive ions could cause uneven image density.

NOTE: The exhaust blower runs at half speed when in the stand-by condition and runs at full speed while copying.

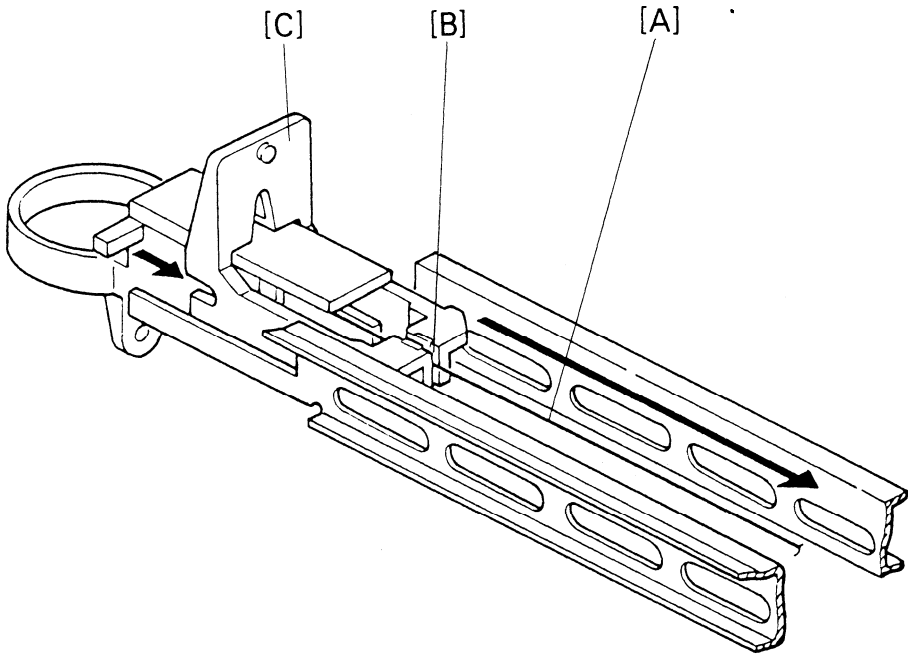
2. TEMPERATURE COMPENSATION



The charge carrying capacity of the selenium drum varies with temperature.

The CTB power pack monitors the drum temperature through a thermistor (TH2), and automatically changes the charge corona voltage to compensate for temperature changes. Temperature compensation starts at 30 degrees and reaches a maximum of 100 milliamperes at 50 degrees.

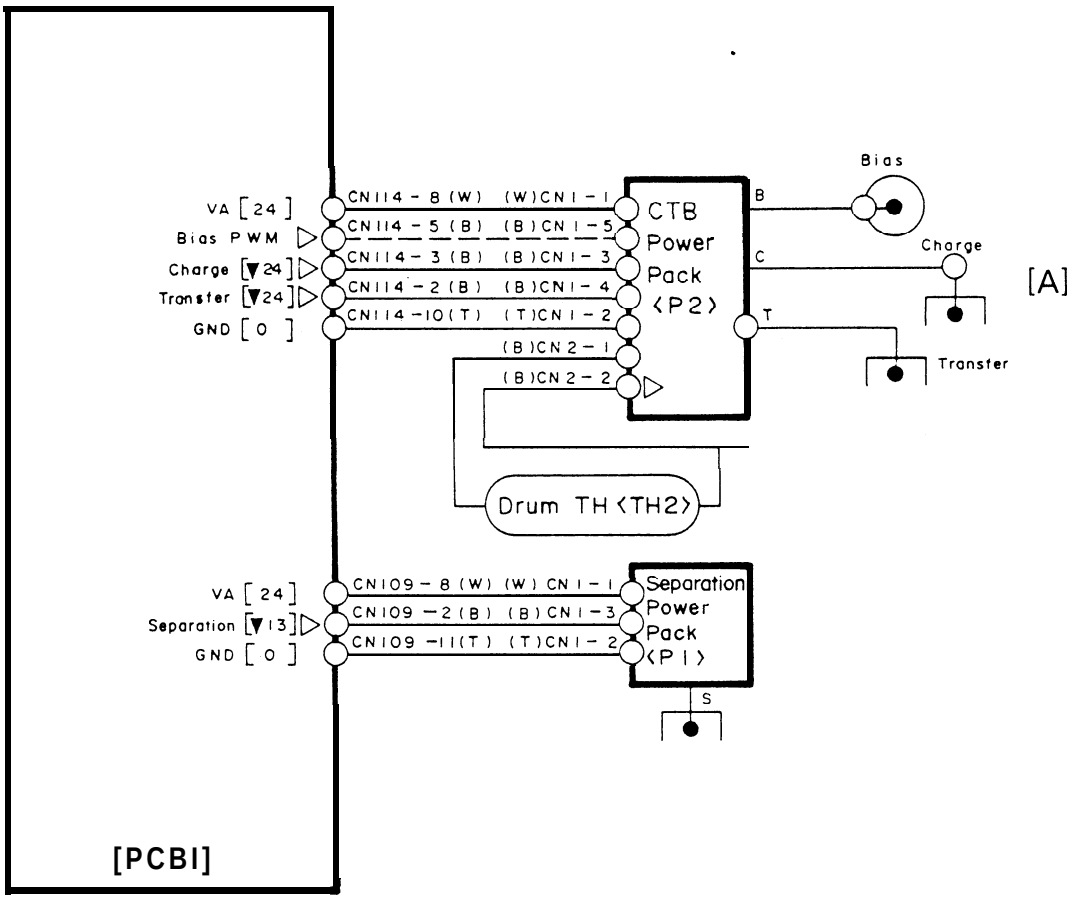
3. CORONA WIRE CLEANER



The flow of air around the charge corona wire [A] may deposit paper dust or toner particles on the corona wire. These particles may interfere with charging and cause low density bands on copies. The wire cleaner [B] allows the operator to correct this problem by simply pulling out and **pushing in the** corona **unit.**

The corona wire is held between two pads on the wire cleaner bracket [C]. **The wire rides between the pads when the unit is** pulled out, and the pads clean off any particles on the wires.

4. CHARGE CORONA CIRCUIT



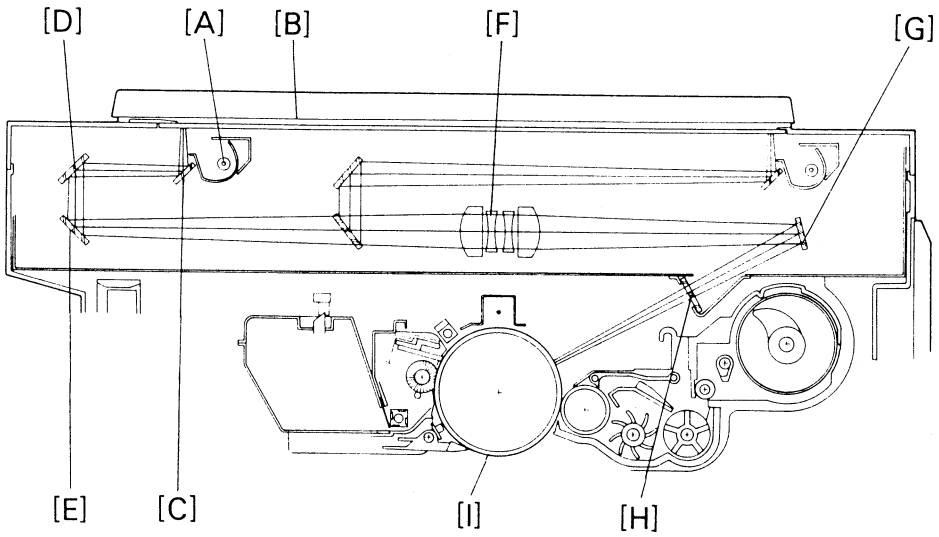
The circuit operation for the charge corona [A] begins with the input of +24 volts to the CTB power pack [P2] at CN1 -1. This power supply is used for the high voltage corona,

On normal copy cycles the charge corona turns on 1.65 seconds after the Start key is pressed. However, on image density check cycles, it turns on 0.28 second earlier so that the sensor pattern will be developed. A LOW signal from the main PCB [PCBI] at CN1 14-3 energizes the CTB power pack.

On the first copy cycle the charge corona turns off when the trailing edge of the original passes the registration sensor (for A4 or letter size copies). From the second copy on, the charge corona turns off 535 milliseconds before the trailing edge of the original passes the registration sensor. (The paper length is measured on the first copy cycle.)

OPTICS

1. OVERVIEW



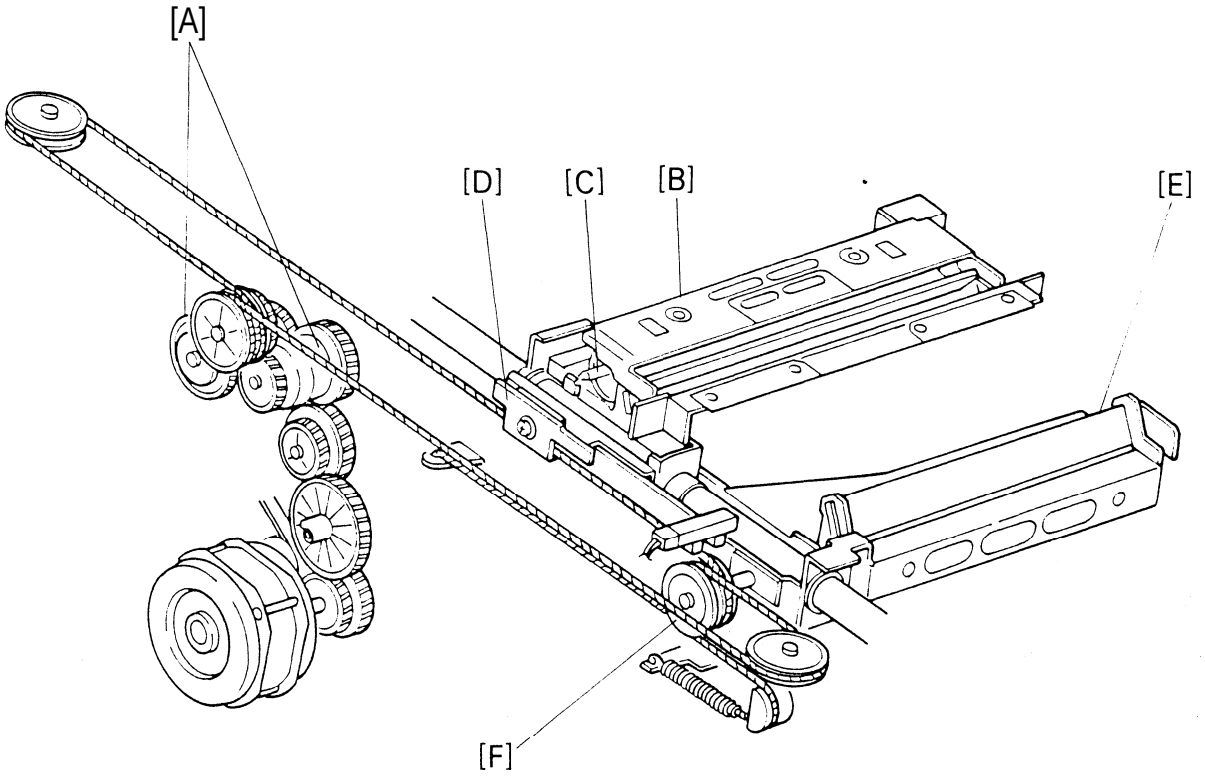
During the copy cycle, an image of the original is reflected onto the drum surface via the optics assembly as follows.

Light Path:

Exposure Lamp [A] --> Original [B] --> First Mirror [C] -->
Second Mirror [D] --> Third Mirror [E] --> Lens [F] -->
Fourth Mirror [G] --> Toner Shield Glass [H] --> Drum [1]

The optics cooling fan prevents the optics cavity from overheating. It turns on and off at the same time as the main motor .

This copier does not have an erase unit. However, there is a lead edge erase margin of 2.0 ~0.5 mm. This erase margin is created by light reflected from the white underside of the ID sensor pattern plate.



This model uses two magnetic clutches [A] to drive the scanners.

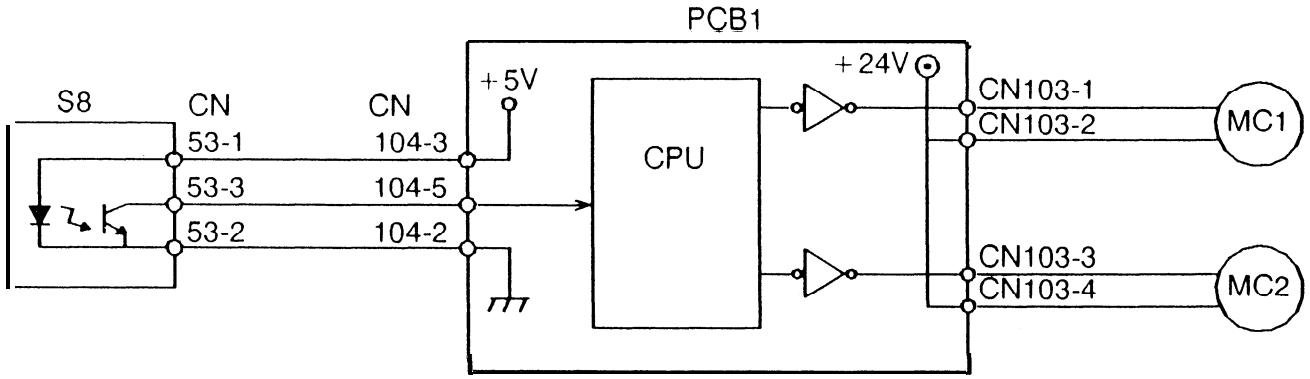
The first scanner [B], which consists of the exposure lamp [C] and the first mirror, is connected to the scanner drive wire by the wire clamp [D]. The second scanner [E], which consists of the second and third mirrors, is connected to the scanner drive wire ‘by a movable pulley (the second scanner pulley [F]).

Throughout the scanning operation, the forward clutch drives the first scanner at the same speed as the peripheral velocity of the drum (96 mm/s).

The second scanner pulley moves the second scanner at half the velocity of the first scanner. This maintains the focal distance between the original and the lens during scanning.

The wire clamp also works as the actuator of the home position sensor. Return timing is controlled by the CPU.

3. SCANNER DRIVE CIRCUIT



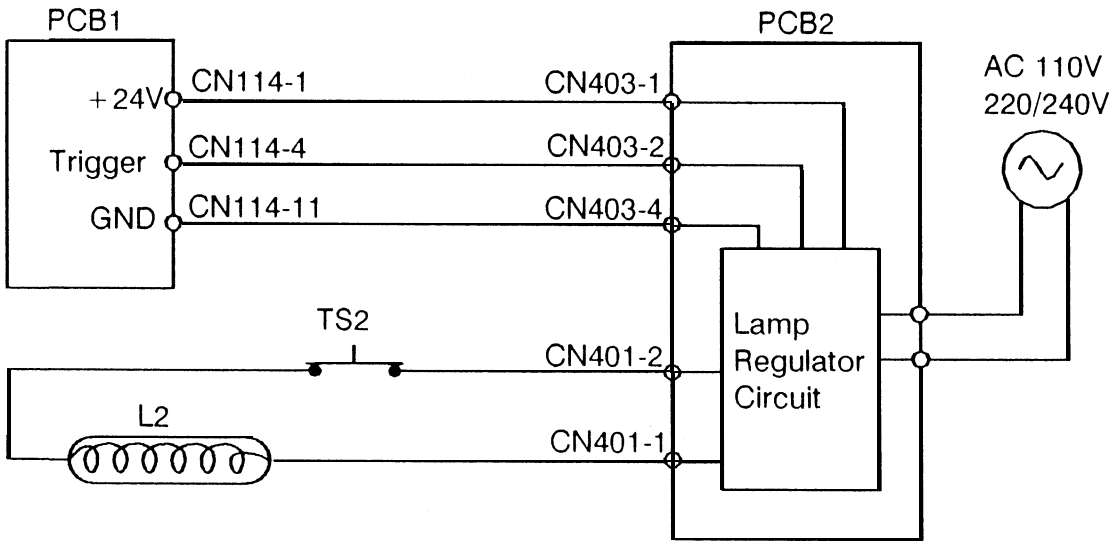
Scanner drive is controlled by the circuit shown above.

The CPU checks the scanner home position sensor [S8] to make sure **the** scanner is at the home (start) position. **If it is not, the CPU** drops CNI03-3 to LOW **to energize the reverse clutch and return the scanner to** the home position.

Scanner drive starts about 2 seconds after the Start key is pressed. The CPU drops CNI 03-1 to LOW to **energize the forward clutch** [MCI] and start forward scan. Forward scanning continues until about 0.5 second after the charge corona turns off. At that time CNI 03-1 goes HIGH again and the forward clutch turns off.

The CPU **waits 200 milliseconds after turning off the forward** clutch, and then drops CN 103-3 to LOW to energize the reverse clutch [MC2] to return the scanner to the home position. The 200 millisecond pause prevents excessive **shock when the scanner reverses. CN1 03-3 goes** HIGH again, stopping the copier, when scanner clamp activates the home position sensor.

4. EXPOSURE LAMP CONTROL

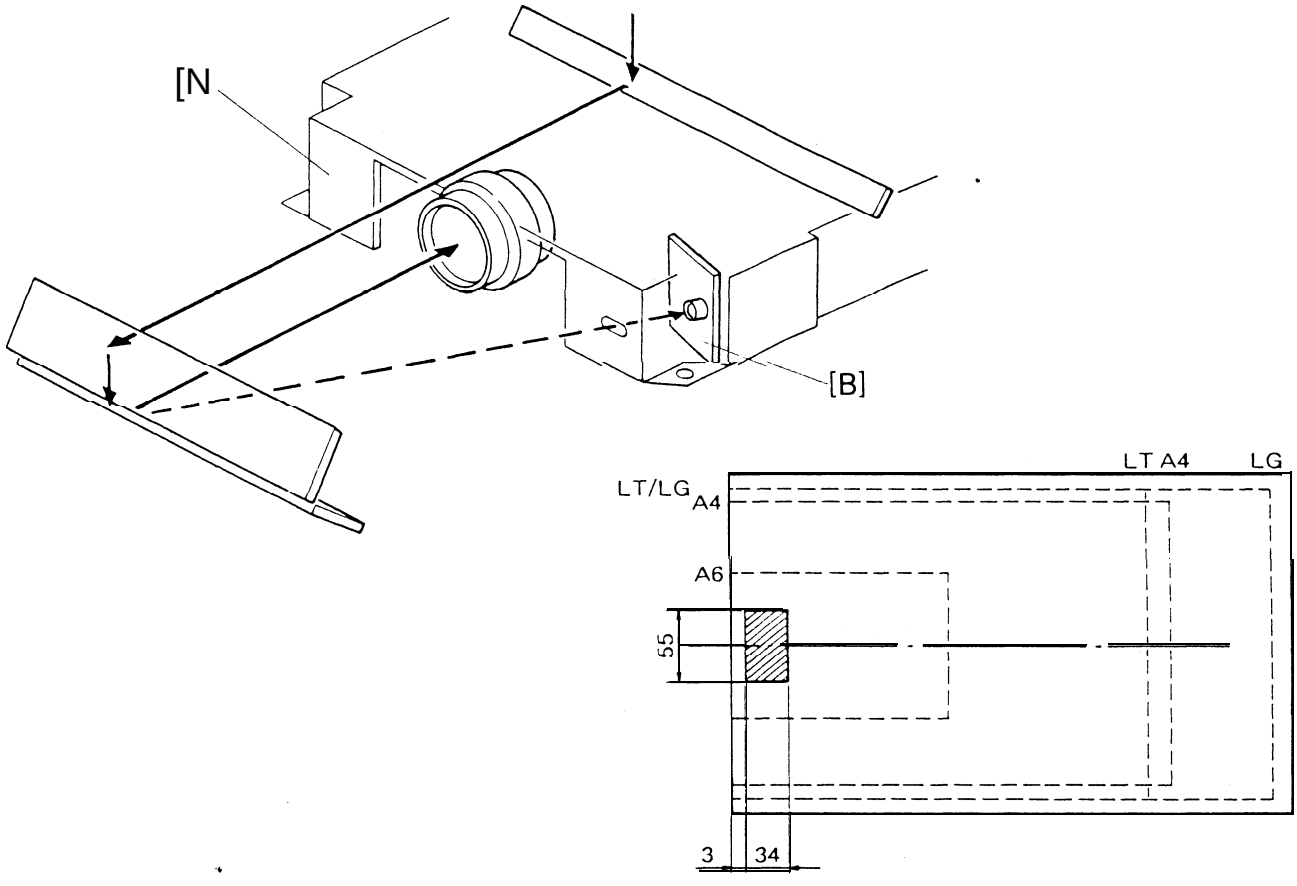


The exposure lamp is controlled by thelamp control PCB [PCB2], which contains both the exposure lamp regulator circuit and the fusing lamp control circuit.

The main CPU sends the lamp trigger signal (LOW) from CNI 14-4 about 1 second after the Start key is pressed. This signal actuates the lamp regulator circuit, which energizes the exposure lamp [L2].

The optics thermoswitch [TS2], which is mounted in the reflector, protects against overheating of the optics cavity. If the temperature rises above 130 degrees C, it opens the lamp circuit.

5. ORIGINAL I.D. SENSING



Light from the exposure lamp is reflected from the original and travels to the lens housing [A] via mirrors. The original ID sensor [B], which is a photosensor, is inside the lens housing. The lens housing has a hole in it to allow light to fall directly onto the photosensor (photodiode).

The original ID sensor samples a strip of the original which starts 3 mm from the leading edge of the original and is **34** mm long and 55 mm wide.

The photosensor circuit converts the light intensity to a voltage level. The detected voltage is amplified and sent to the main PCB. On the main PCB a peak hold circuit keeps the maximum voltage. The CPU then computes the image density of the original and adjusts the development bias accordingly.

(See the section on image density control for more information.)

`6. SERVICE CALL CONDITIONS

- Code El -

The CPU checks the original **ID** sensor approximately 1 second after the exposure lamp turns on. If the input from the sensor is less than 0.3 volt, the CPU stops the copier and displays El in the copy counter. Possible causes are an open lamp circuit or sensor malfunction.

- **Code** E2 -

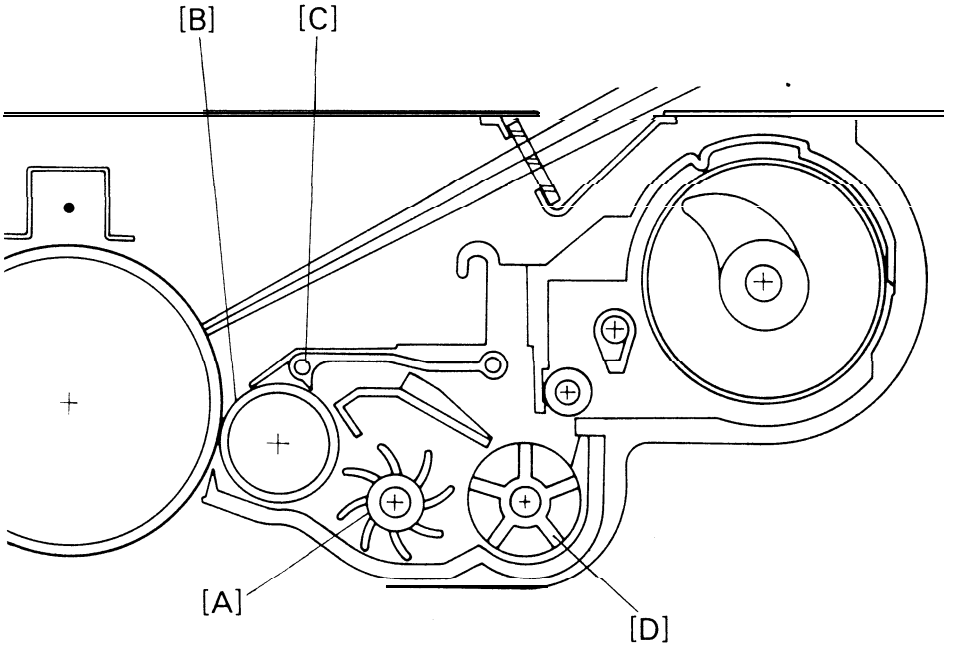
E2 **is displayed under the following conditions:**

- The scanner home position sensor does not turn on within 10 seconds after the Start key is pressed.
- **The scanner home position sensor does not turn off within 3** seconds after **the** scanner starts moving.
- The scanner home position sensor does not turn on within 2 seconds after the reverse clutch turns on.

Possible causes are clutch failure, home position sensor failure, and loose scanner drive wire.

DEVELOPMENT

1. OVERVIEW



When the main motor turns on, the paddle roller [A] and development roller [B] **start turning.** The paddle roller picks up developer in its paddles and transports it to the development roller. Internal permanent magnets in the development roller attract the developer to the development roller sleeve.

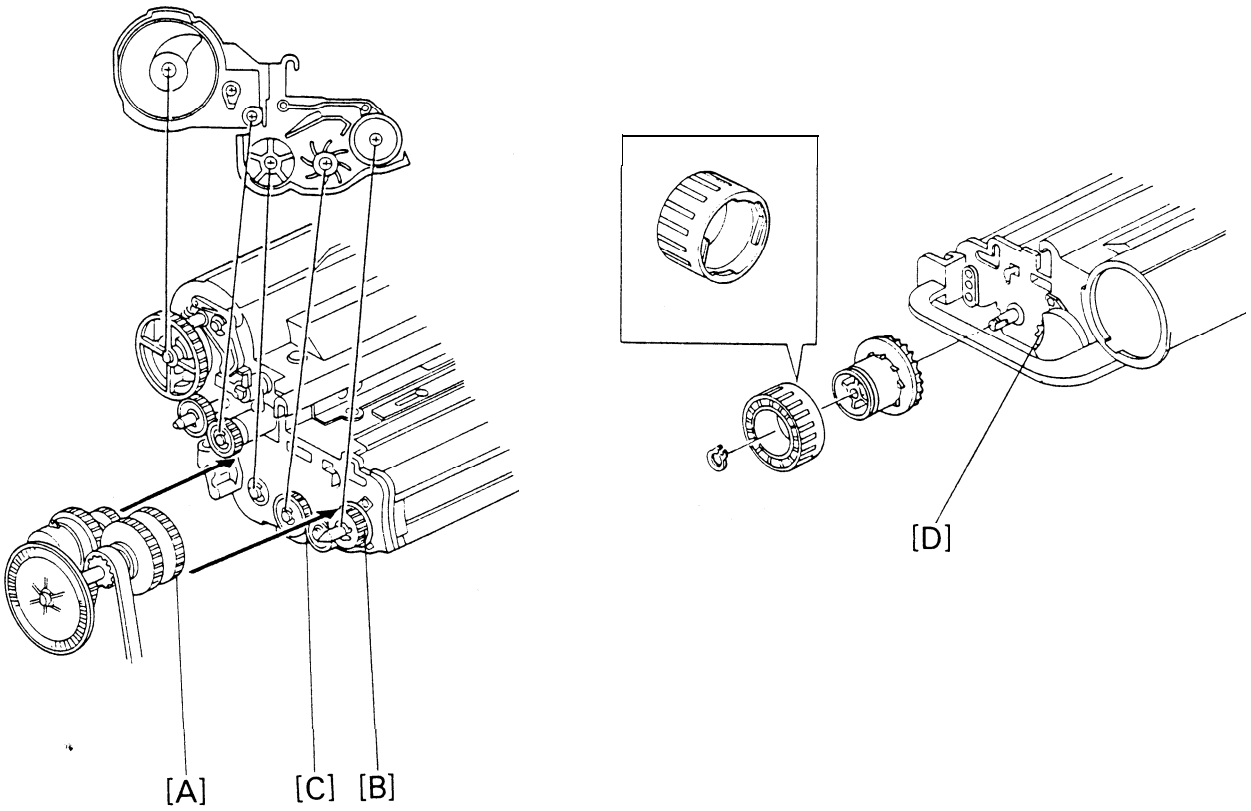
The turning sleeve of the development roller then carries the developer past the doctor blade [C]. The doctor blade trims the developer to the desired thickness and creates backspin to the cross-mixing mechanism.

The development roller continues to turn, carrying the developer to the selenium drum. When the developer brush contacts the drum surface, the positively charged areas of the drum surface attract and hold the negatively charged toner. In this way, the latent image is developed.

The development roller is given a positive bias to prevent toner from being attracted to non-image areas on the drum that may have residual positive charge. The bias also controls image density.

After turning about 100 degrees more, the development roller releases the developer to the developer tank. The developer is agitated by the paddle roller, agitator **[D],** and the cross-mixing mechanism.

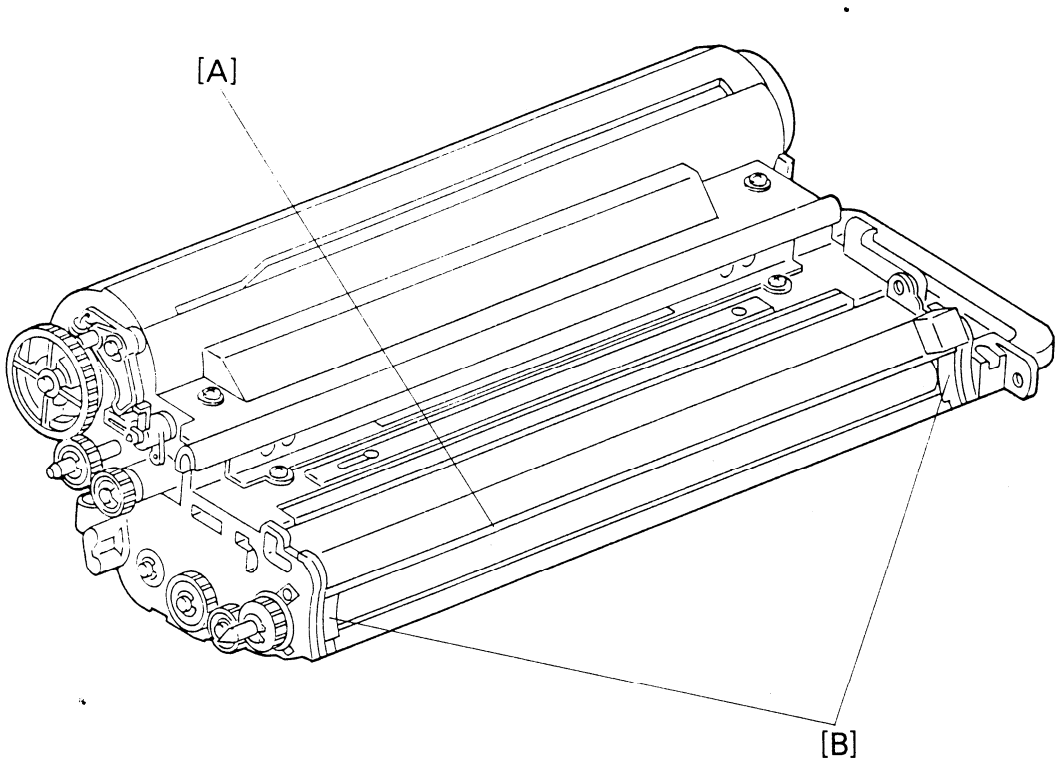
2. DRIVE MECHANISM



When the main motor turns, the rotation is transmitted from the development drive gear [A] to the development roller gear [B]. An idle gear [C] turns the paddle roller gear. A gear on the front end of the paddle roller shaft drives the agitator gear [D].

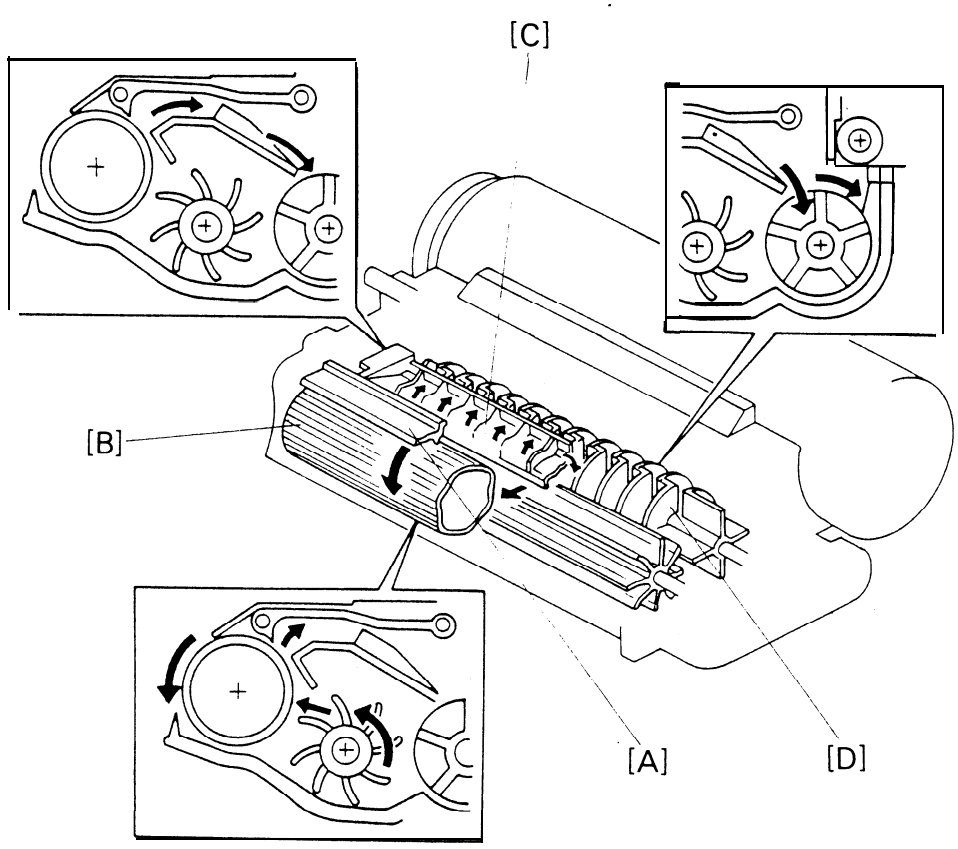
The paddle roller shaft has a knob on its front end to facilitate gear engagement and to turn the rollers for developer exchange. The paddle roller knob has a one-way clutch inside. The one-way clutch prevents the development roller from being turned opposite to the normal direction, which would cause the developer brush to damage the upper brush seal.

3. **SEALS**



Several seals prevent toner from spilling out into the copier. The upper brush seal [A] prevents particles from scattering upward. The development unit side seals [B], are in contact with the drum ends (out of the image area) preventing toner scattering from the ends of the unit.

4. **CROSS-MIXING**



This copier uses a cross-mixing mechanism to keep the toner and developer evenly mixed and level in the development unit. It also helps agitate the developer to prevent clumping and helps create the triboelectric charge.

The developer on the turning development roller is split into two parts by the doctor blade [A]. The part that stays on the development roller [B] forms the magnetic brush and develops the latent image on the drum. The part that is trimmed off by the doctor blade goes to the backspin plate [C].

As the developer slides down the backspin plate to the agitator [D], it is moved slightly toward the rear of the unit by the mixing vanes.

The agitator moves the developer slightly to the front as it turns, so the developer stays level in the development unit.

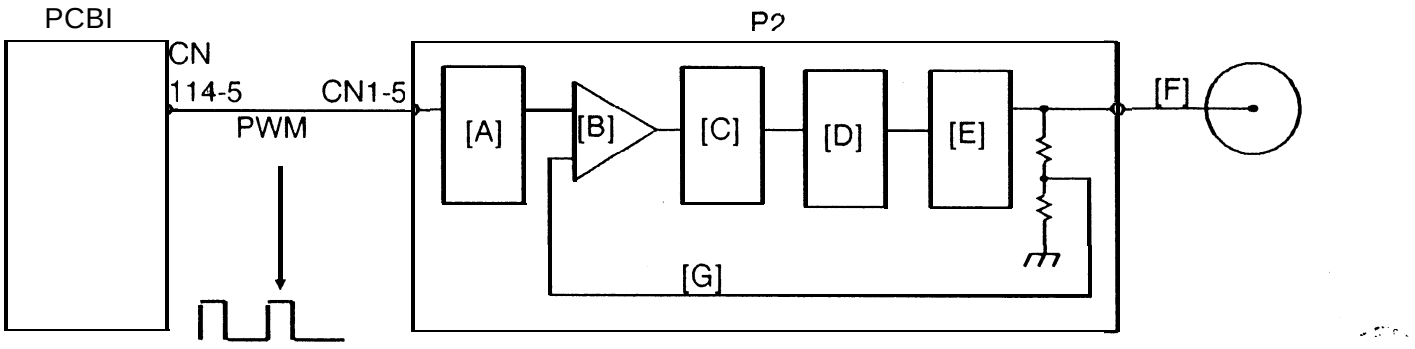
5. IMAGE DENSITY CONTROL

Image density depends on two items: (1) the strength of the bias voltage applied to the development roller sleeve, and (2) the strength of the voltage applied to the exposure lamp. In this machine, the image density is controlled by varying the development roller bias.

Applying a bias voltage to the development sleeve reduces the potential between the development roller and the drum, thereby reducing the amount of toner that is transferred. So, as the bias voltage becomes greater, the copy image becomes lighter.

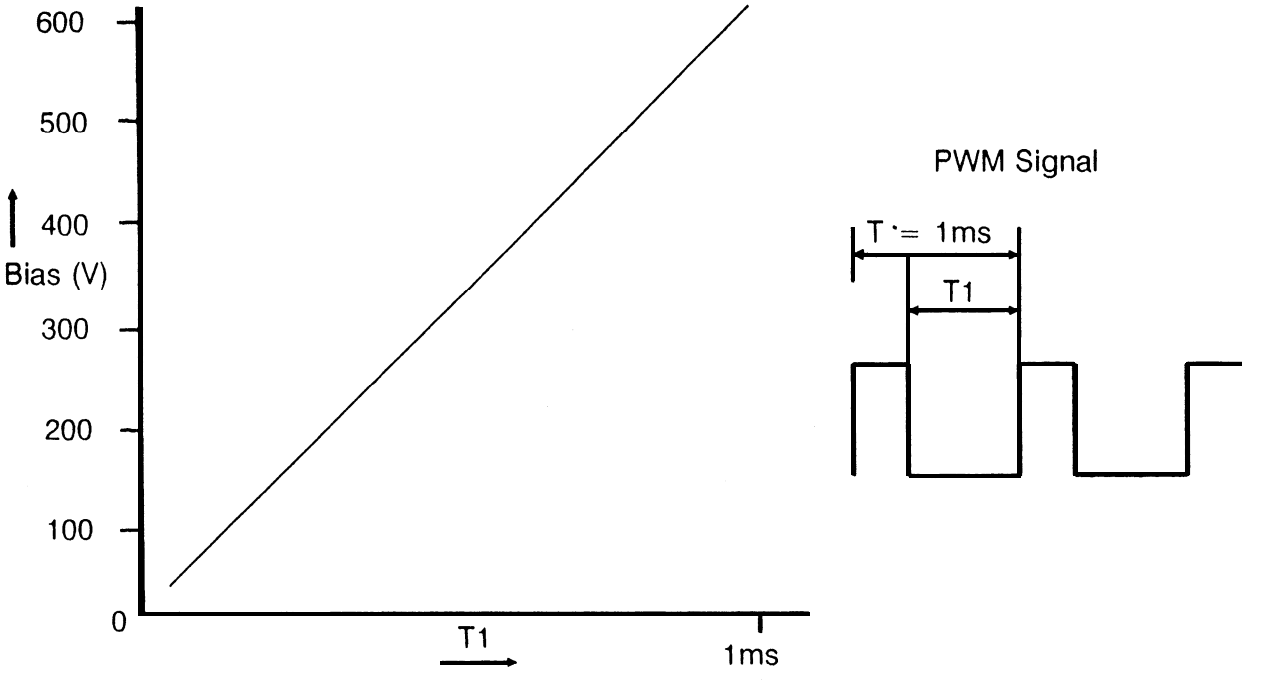
The method of control is different depending on whether the image density is manually selected or the automatic ID system is used.

- Development Bias Circuit -



In order to understand how the manual and automatic image density control systems work, you need to understand how the bias control circuit works.

To control the bias output level, the timer/event counter of the CPU produces a pulse width modulation signal (PWM). The period of the PWM signal is 1 millisecond. This signal is applied to CNI -5 of the CTB power pack. The PWM signal first goes to a demodulator [A], which converts it to an analog signal. The analog signal is then amplified [B] and used as the gain control signal of an oscillator [C]. The output of the oscillator is multiplied by a step-up transformer [D]. Then the output of the transformer is rectified [E]. This forms the output bias voltage [F]. The output from a voltage divider is applied to the amplifier as feedback [G].



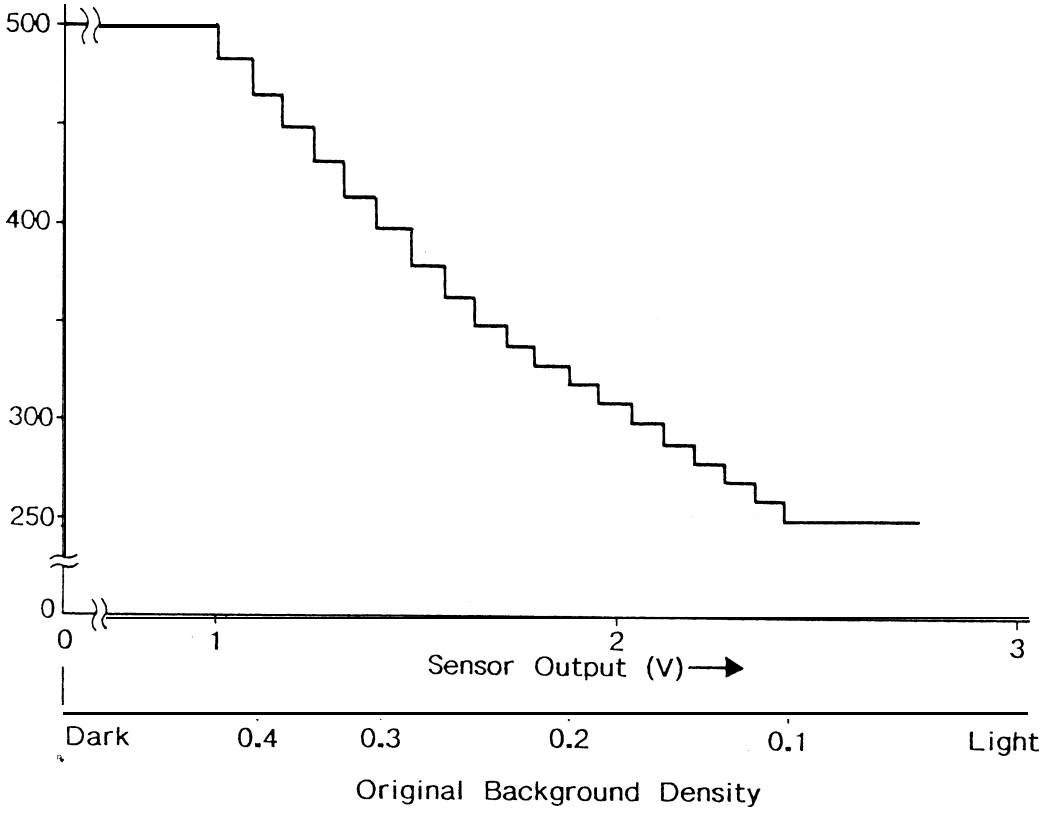
By using this type of circuit, the bias output can be controlled using only one signal line. The strength of the bias depends on the ratio of T1 to T. The bias voltage increases linearly as T1 increases. (See the illustration.)

- Manual Image Density Control -

Notch	1	2	3	4	5	6	7
Bias	100	150	200	250	300	350	500

When in manual ID control mode, the bias voltage depends on which notch (which ID level on the operation panel) the user selects. The voltage applied at each notch is shown in the above table.

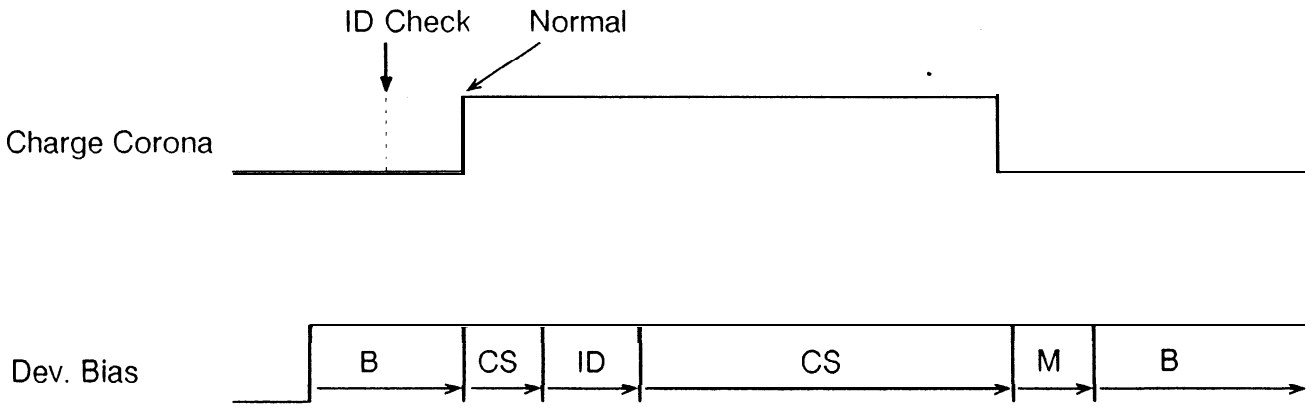
- Automatic Image Density Control -



When automatic image density control is used, the bias depends on the background image density of the original, which is measured using the original ID sensor.

In this mode the bias can take values between 250 volts and 500 volts. If the output of the original ID sensor is 2.4 volts or greater, corresponding to an original ID of 0.1 or less (white background), the bias becomes 250 volts. The maximum value of 500 volts is applied if the original ID sensor output is 1.0 volt or less. Between these values, the bias is applied as shown in the above chart.

6. BIAS FOR ID SENSING



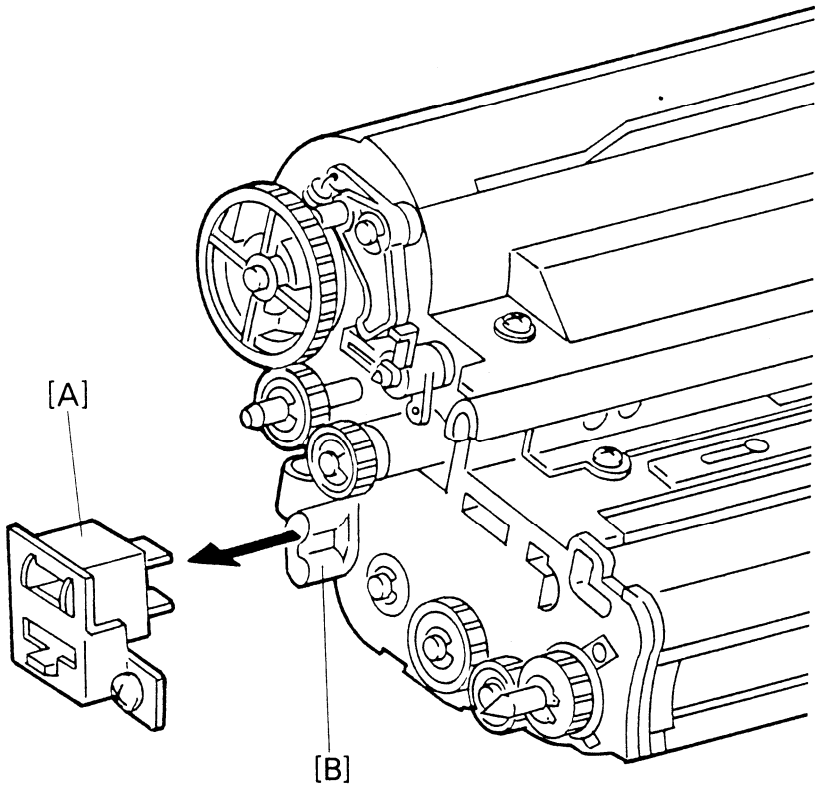
B: Base bias (250 V)
Cs: Copy cycle bias (set by user or original ID sensor)
ID: ID sensor bias (Normally 470 V)
M: Max bias (620 V)

DPSI02-1	DPSI02-2	ID Sensor Bias
OFF	OFF	420 volts
ON	OFF	470 volts
OFF	ON	520 volts
ON	ON	550 volts

In order to develop the ID sensor pattern consistently, the CPU applies a fixed bias level to the development roller at the beginning of each ID check copy cycle. Normally, the bias for ID sensing is 470 volts, but it can be adjusted to increase or decrease toner density using DIP switches 102-1 and 102-2.

On ID check cycles, the charge corona turns on earlier in order to develop the sensor pattern. The CPU applies the ID sensor bias to the development roller about 1.9 seconds after the Start key is pressed. Just after the sensor pattern is developed, the CPU changes the bias output to the level selected by the original ID sensor or the operator. The bias output remains at this level until just after the trailing edge of the latent image passes the development roller, at which time the maximum bias is applied for the charged non-image area of the drum. After that area has passed the development roller, the bias drops from the maximum bias to the base bias of 250 volts.

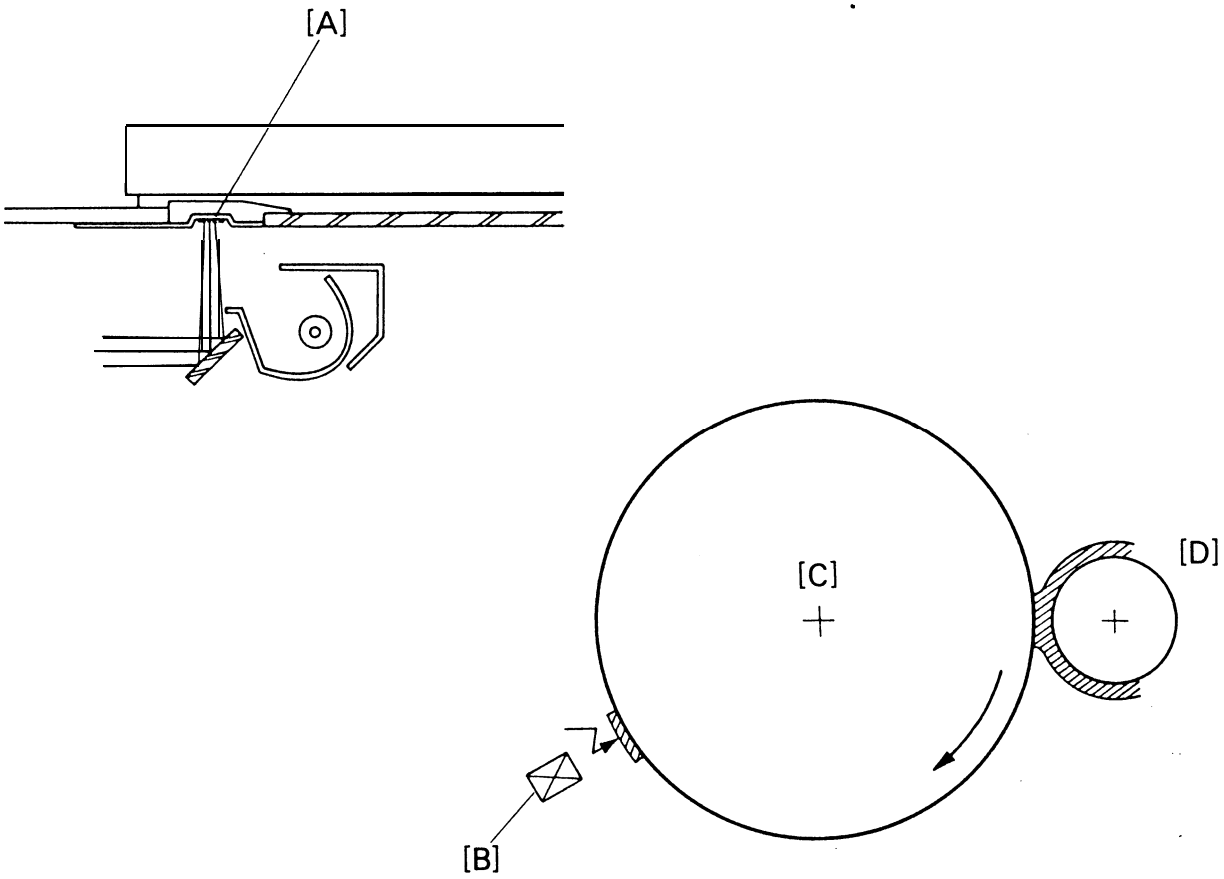
7. **DEVELOPMENT SET SWITCH**



When the development unit is removed from the copier, the development set switch [A] turns off and U3 lights in the operation panel. When the development unit is properly set in the copier, the switch is actuated by a projection on the rear of the unit [B], and U3 turns off.

TONER DENSITY DETECTION AND TONER SUPPLY

1. TONER DENSITY DETECTION



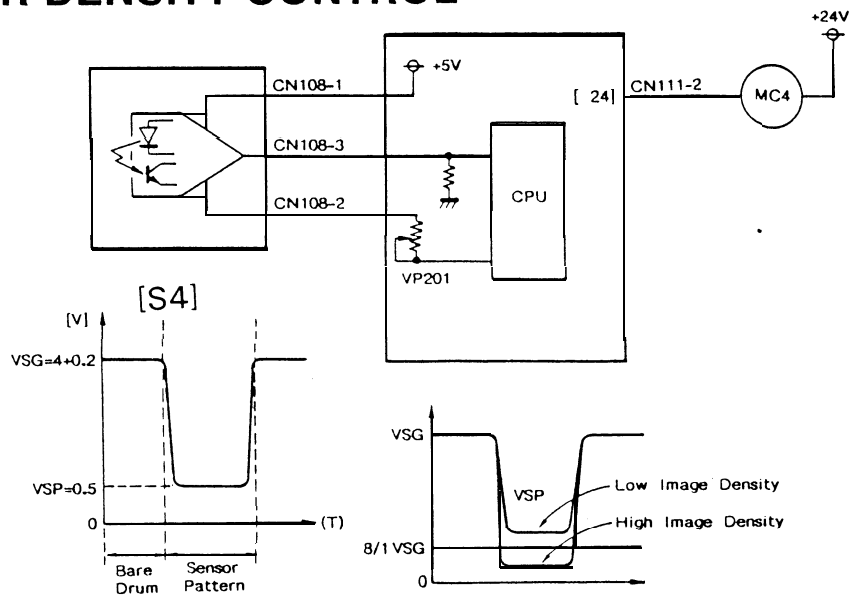
C: Drum
D: Development Roller

The CPU checks toner density by directly sensing the image density at the beginning of the first copy cycle after the main switch is turned on, and at every 10th copy after that.

During the check cycles, the sensor pattern is exposed prior to exposure of the original. After the sensor pattern [A] is developed, its reflectivity is checked by the image density sensor [B] (which is a photosensor). The CPU notes the strength of reflectivity. If the reflected light is too strong, indicating a too low toner density condition, it adds toner to the development unit.

The toner is not added all at once. The CPU energizes the toner supply clutch for the proper amount of time to add a selected amount of toner over the next 10 cycles.

2 TONER DENSITY CONTROL



The image density sensor checks the density of the sensor pattern image once every 10 copy cycles. The CPU receives two voltage values directly from the sensor: the value for the bare drum (Vsg) and the value for the sensor pattern (Vsp). These two values are then compared to determine whether or not more toner should be added.

1. Vsp $\leq$ 1/8 Vsg: High image density (no toner is added)

2. Vsp > 1/8 Vsg: Low image density (toner is added)

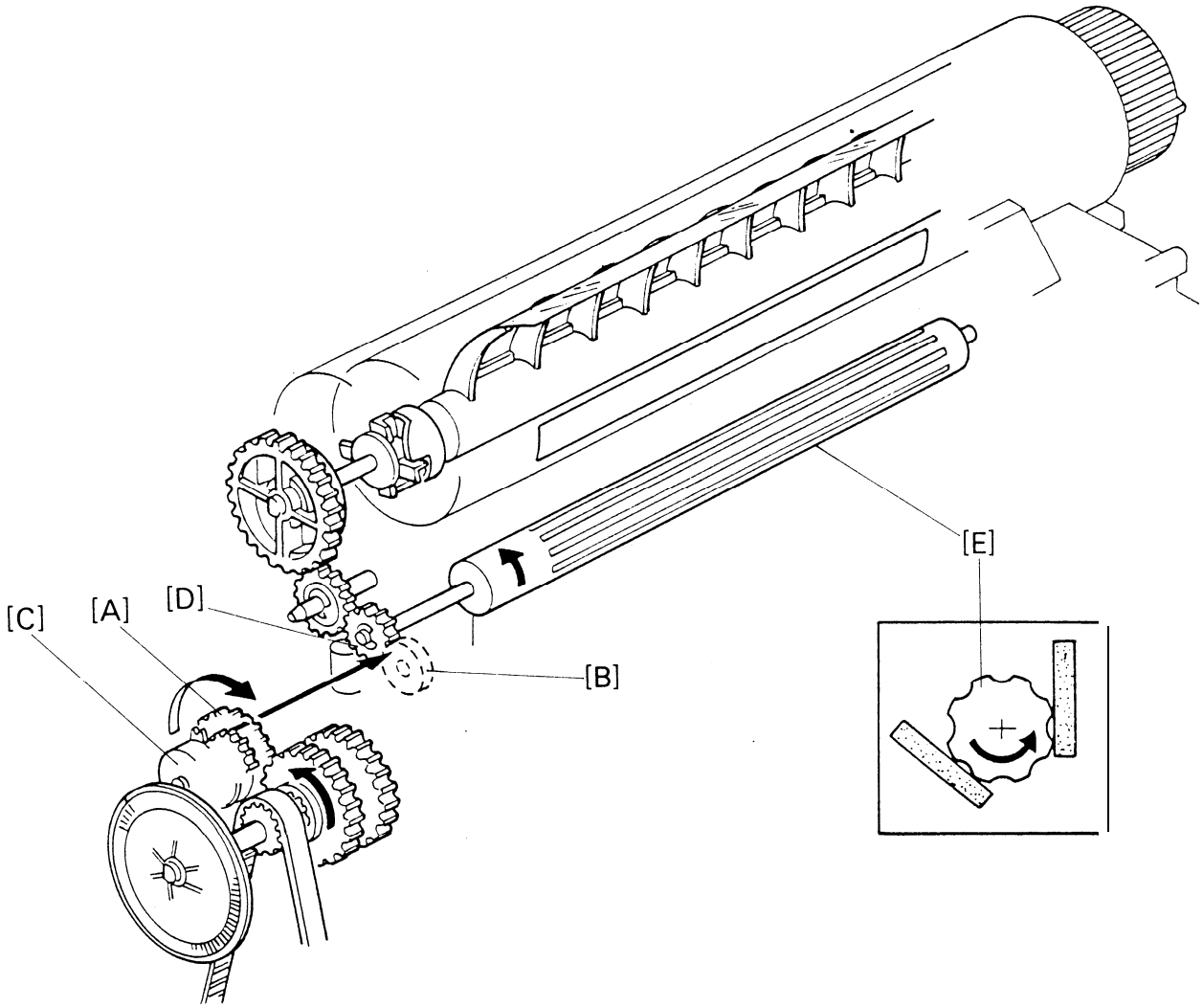
When the image density is too low, the CPU activates the toner supply clutch to add a selected amount of toner over the next 10 copy cycles. The amount added depends on the value of Vsp. If Vsp is between 0.5 and 0.6 volt, an amount of toner equivalent to a 30?40 black area copy image is added on each cycle. If Vsp is between 0.6 and 0.75 volt, the amount becomes 45%; and if Vsp is 0.75 volt or greater the amount becomes 60%. (These numbers apply only if Vsg is correctly adjusted to 4 volts.)

The ID sensor can also initiate the toner end condition. If Vsp is 1.2 volts or greater 3 times in a row, the Add Toner indicator turns on.

If Vsg goes below 2.5 volts or Vsp goes above 2.5 volts, the CPU judges that the ID sensor is malfunctioning. The CPU then stops reading the ID sensor voltage and shifts the copier to 7% fixed toner supply. At the same time either the Auto ID indicator or the selected manual ID level starts blinking.

Test mode #3 is used to turn on the LED of the sensor manually; when it is on, VRI02 can be used to adjust the light intensity of the sensor LED.

3. TONER SUPPLY

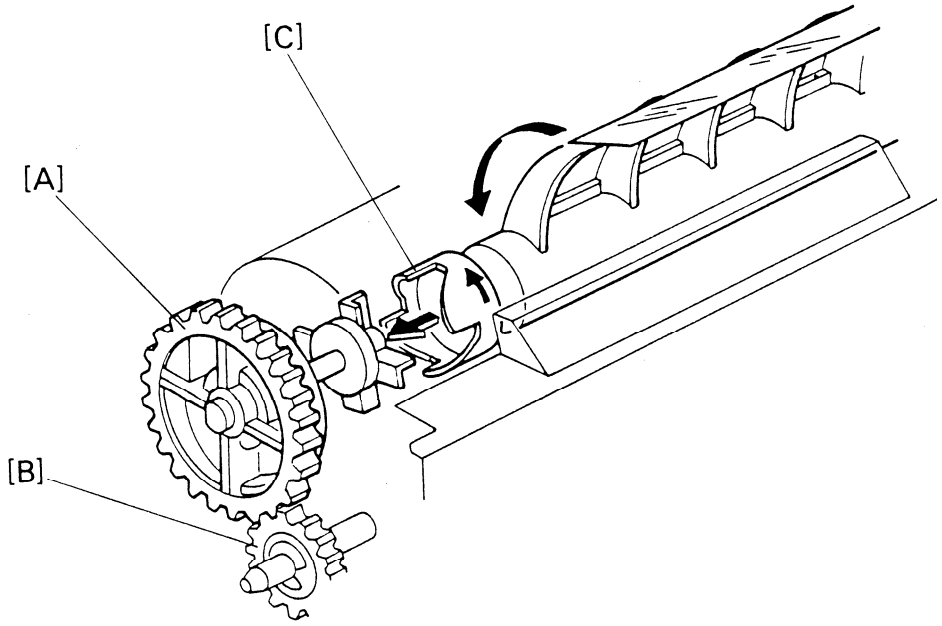


- Roller Drive Mechanism -

The toner supply clutch gear [A] turns when the main motor is on. The transmission of this rotation to the toner supply drive gear [B] is controlled by the toner supply clutch [C].

When the toner supply clutch energizes, the toner supply drive gear starts turning. The toner supply drive gear turns the toner supply roller gear [D] . Toner catches in the grooves on the toner supply roller [E]. Then, as the grooves turn past the opening, the toner drops into the development unit.

- Toner Agitator Drive Mechanism -

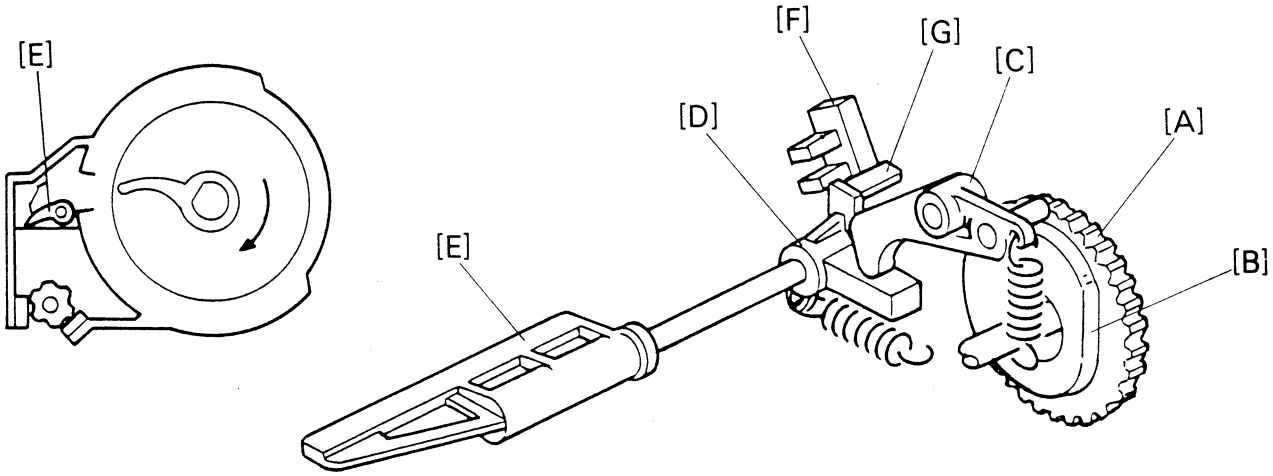


The toner agitator mechanism, which is contained in the toner cartridge, prevents toner from blocking.

The toner agitator gear [A] is engaged with the toner supply roller gear through an idle gear [B]. Therefore, the toner agitator gear turns whenever the toner supply clutch is engaged.

Rotation passes through the toner cartridge casing to the agitator junction [C]

4. TONER END DETECTION



The toner agitator gear [A] has a cam [B] (the toner **end** cam) on its inner surface, and it rotates only when toner is supplied. The cam follower on the end of the toner end lever [C] rides on the surface of the toner end cam (spring pressure). The opposite end of the toner end lever alternately presses and releases the toner end arm [D] as the cam turns. The toner end plate [E], which is in the toner hopper, is mounted on the same shaft as the toner end arm.

When there is sufficient toner in the hopper, the toner end plate is prevented from moving by the toner. Therefore, even when the toner end lever drops to the lowest position on the cam (releasing the toner end arm), the toner end arm does not move and the toner end sensor [F] is not activated.

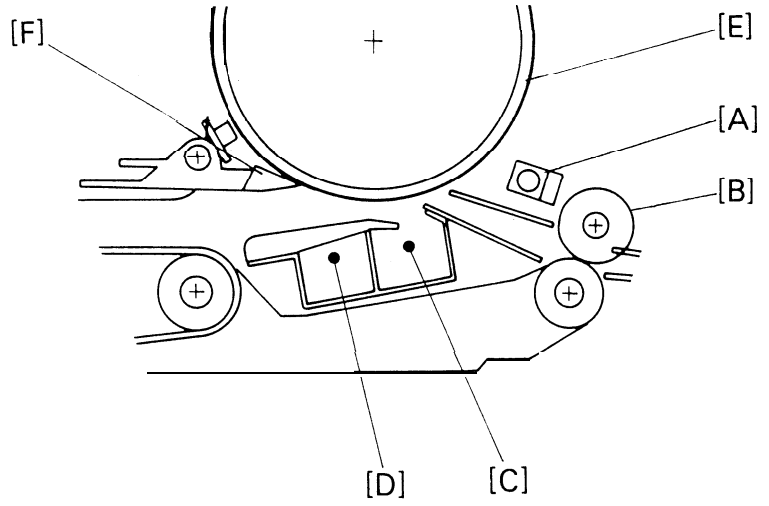
When there is insufficient toner in the hopper, the toner end plate can move. When the toner **end** lever releases the toner end arm, the toner end plate lowers, and the actuator [G] on the toner end arm moves into the toner end sensor. The CPU receives a single pulse from the toner end sensor.

If this condition is detected by the CPU two times consecutively, the Add Toner indicator turns on. After the indicator turns on 20 copies can be made. If a new toner cartridge is not added within that 20 copy interval, copying is inhibited.

NOTE: The toner end condition is normally detected by the mechanism described here. However, it can also be detected by the ID sensor. A Vsp reading of 1.2 volts or greater 3 times in a row will cause the Add Toner indicator to turn on.

IMAGE TRANSFER AND PAPER SEPARATION

1. PRE-TRANSFER LAMP (PTL)



After the latent image is developed but before the image is transferred to the copy paper, the drum surface is illuminated by the pre-transfer lamp [A]. This illumination reduces the positive potential on the drum surface. This prevents the toner particles from being re-attracted to the positively charged drum during the paper separation process. It also makes image transfer and paper separation easier. Unlike earlier models, this copier uses a neon lamp for the PTL.

2. IMAGE TRANSFER

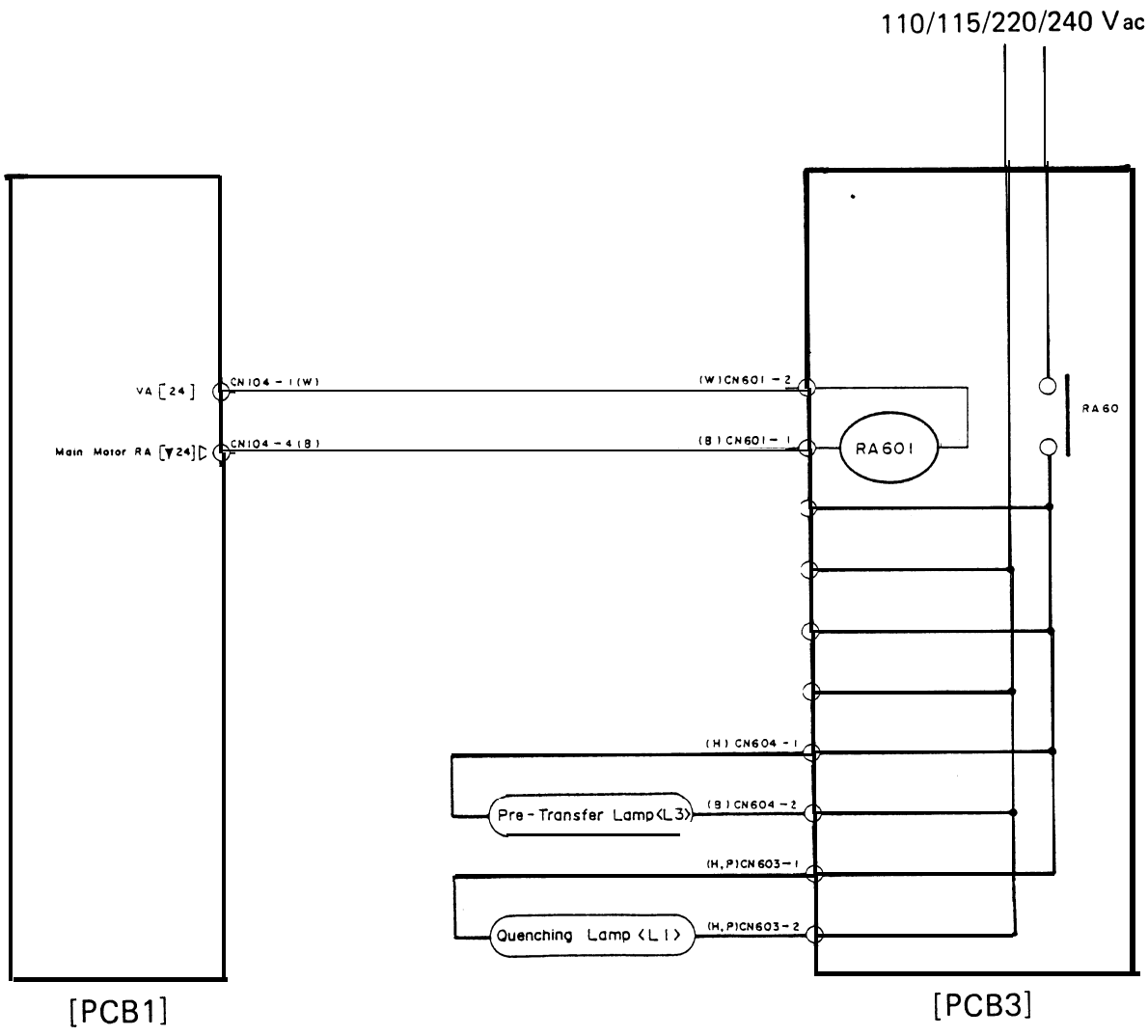
The registration rollers [B] feed the copy paper through the transfer entrance guides to the transfer section. A high positive voltage (+5.4 kilovolts) is applied to the transfer corona wire [C], and the corona wire generates positive ions. These positive ions are applied to the copy paper, and the positive charge attracts the negatively charged toner away from the drum and onto the paper. In addition, the paper is held against the drum by the negative countercharge on the drum.

3. PAPER SEPARATION

After image transfer the copy must be separated from the drum. To break the attraction between the paper and the drum, the separation corona wire [D] applies an ac corona (5.0 kV, 500 Hz) to the reverse side of the paper. The stiffness and weight of the paper cause it to separate from the drum [E].

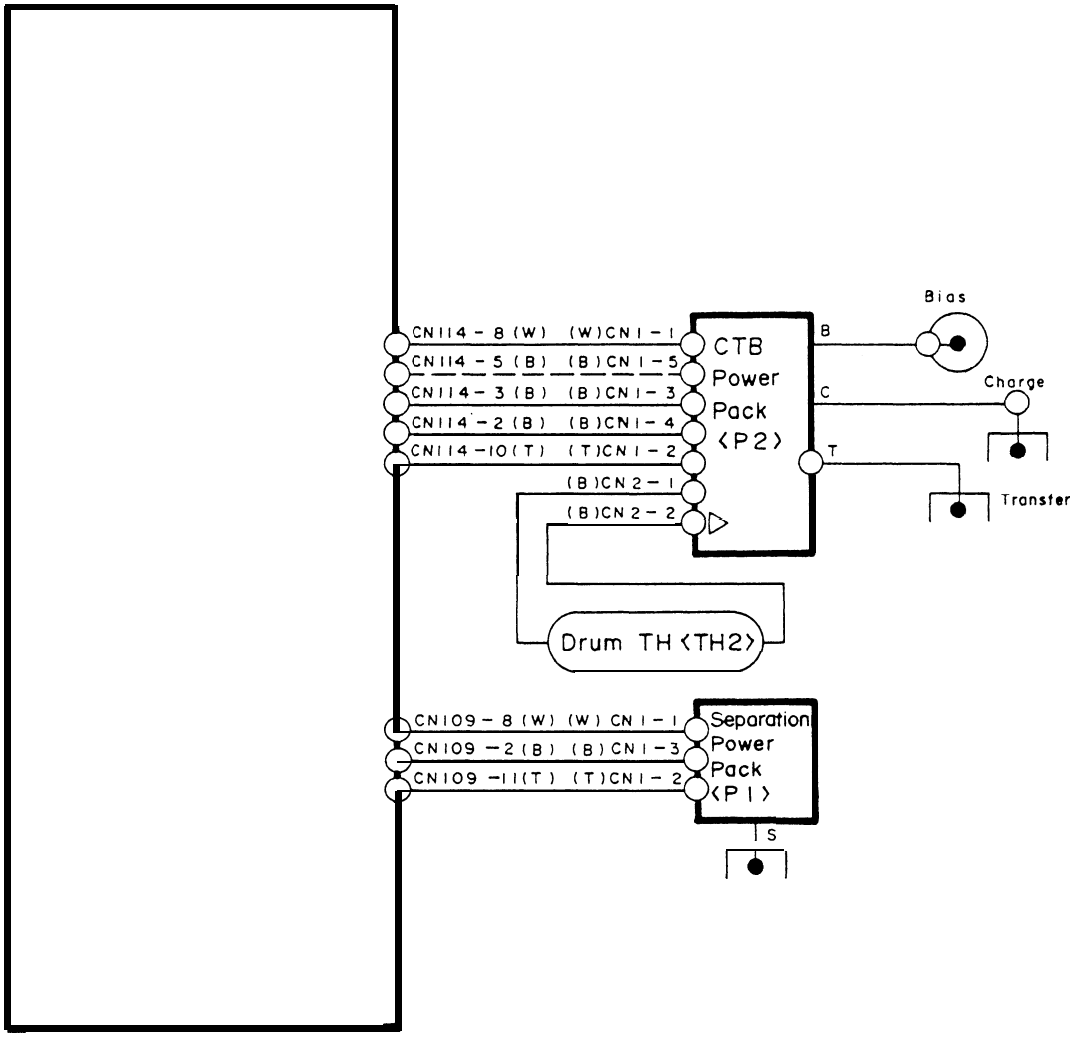
The separation corona has a small dc bias but its effect is negligible. A **dc** bias is unnecessary because the separation corona is wide **and diffuse.** The positive charge on the paper (from the transfer corona) is not completely **discharged** until the paper is far enough from the drum that the toner will not **be** reattracted to the drum. The two pick-off pawls [F] ensure that thin, low-stiffness paper or upward curled paper separates completely.

4. PRE-TRANSFER LAMP CIRCUIT



About 0.4 second after the Start key is pressed, the main PCB [PCB1] outputs a LOW signal at CN104-4. This signal energizes RA601 on the ac drive PCB [PCB3], and turns on the PTL. The main motor, optics cooling fan, and quenching lamp all turn on at the same time.

5. **TRANSFER/SEPARATION CORONA CIRCUITS**

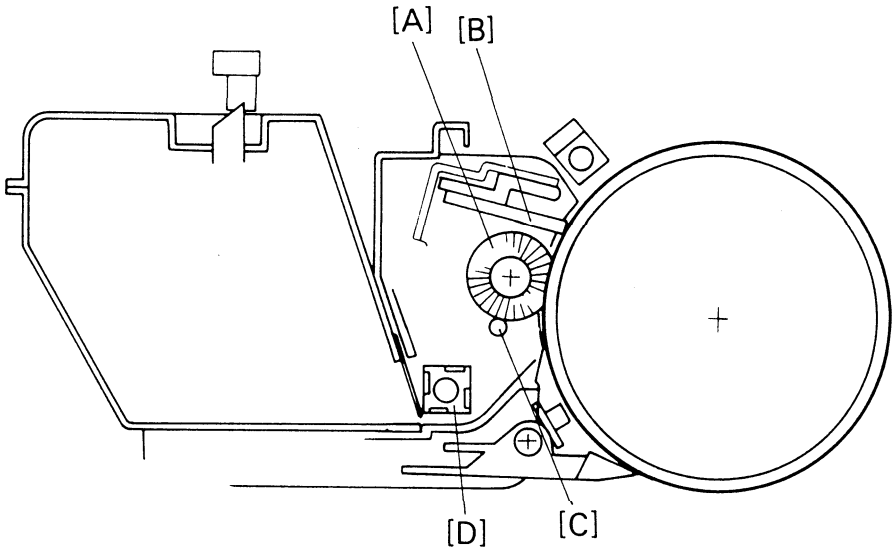


The main PCB [PCBI] powers the CTB power pack by providing +24 volts at CN 114-8 and powers the separation power pack with +24 volts at CN 109-8. To actuate the transfer and separation coronas, the CPU provides a LOW at CNI 14-2 and CN1 09-2 respectively.

On normal copy cycles the transfer corona turns on 0.3 second after the Start key is pressed, and the separation corona turns on 10 pulses later. On ID check cycles, both coronas turn on 1.8 seconds after the Start key is pressed. The transfer corona turns off 9.5 seconds after the trailing edge of the copy passes the registration sensor, and the separation corona turns off 10 pulses later.

DRUM CLEANING

1. OVERVIEW



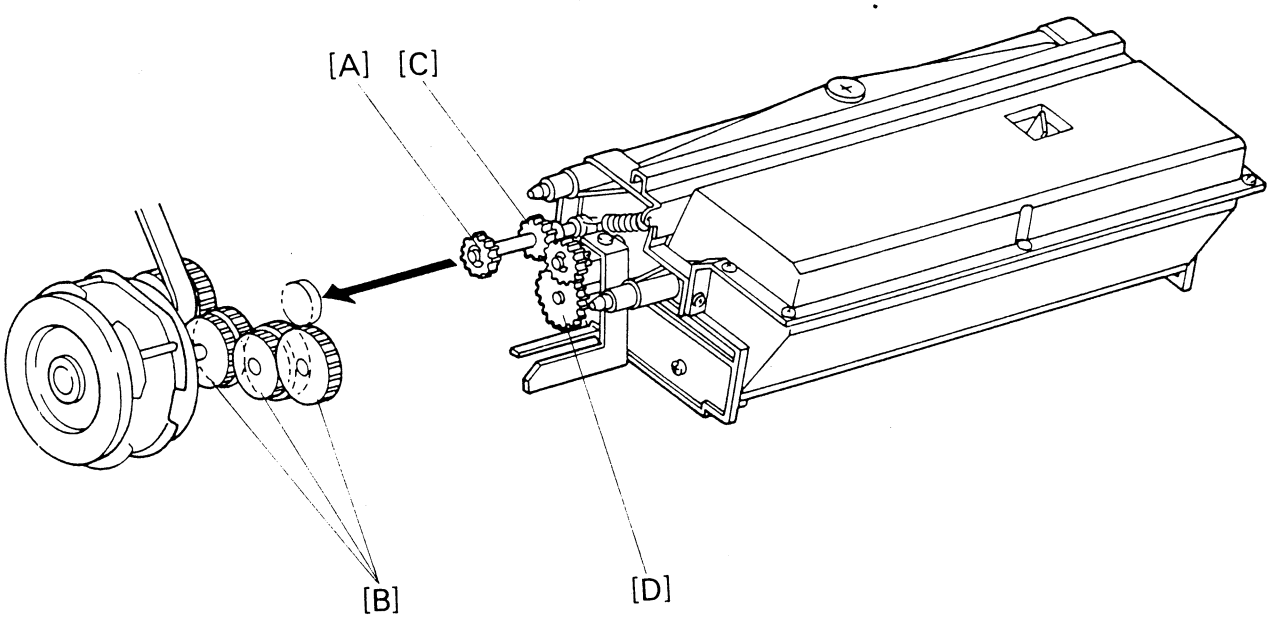
The cleaning brush [A] and cleaning blade [B] remove any toner remaining on the drum after the image is transferred to the paper.

The cleaning brush and drum move in opposite directions at their point of contact. The cleaning brush removes paper dust and nearly half of the toner from the drum surface to reduce the cleaning load placed on the blade.

Next, the cleaning blade removes the remaining toner. The falling toner catches in the fibers of the cleaning brush and is carried inside the cleaning unit. As the brush turns inside the cleaning unit, it rubs against a beater bar [C], which dislodges the toner particles. The toner particles fall onto the toner sweeping bar [D].

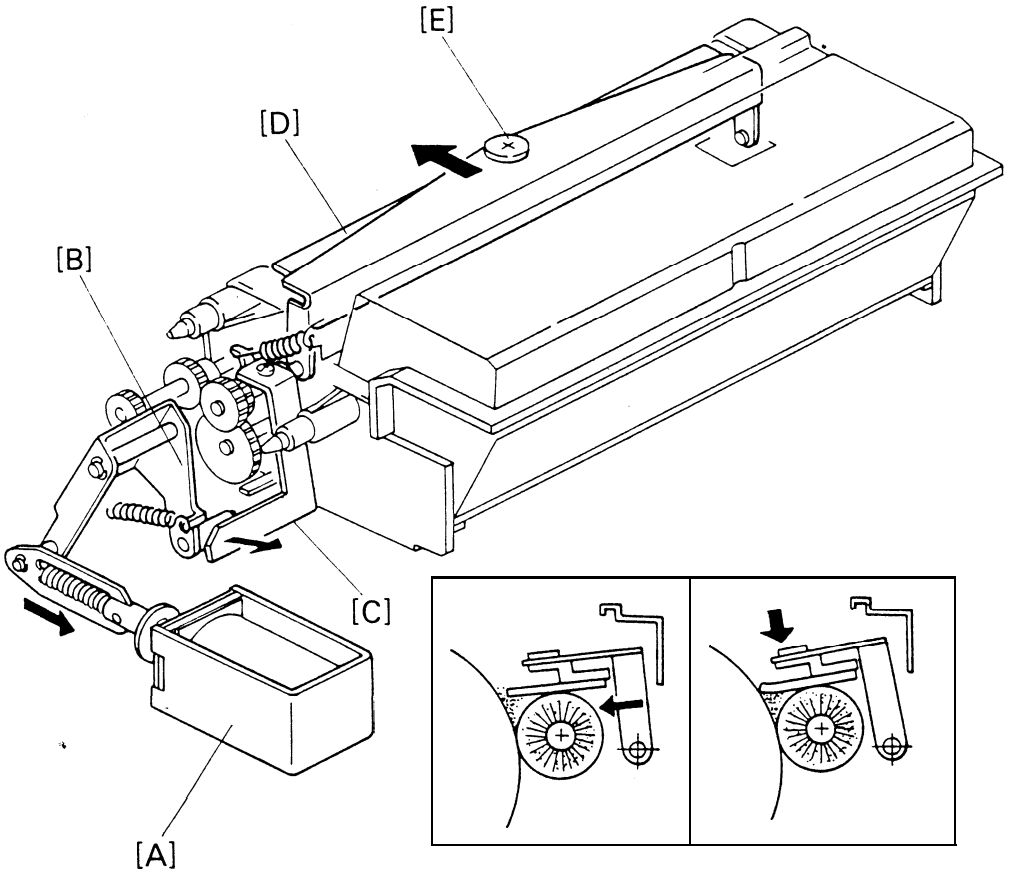
The toner sweeping bar moves the used toner into the used toner tank.

2. CLEANING DRIVE MECHANISM



The main motor turns the cleaning brush gear [A] through a series of idle gears [B]. Rotation passes from the cleaning brush idle gear [C] on the cleaning brush shaft through an idle gear to the toner sweeping bar gear [D].

3. CLEANING BLADE MECHANISM



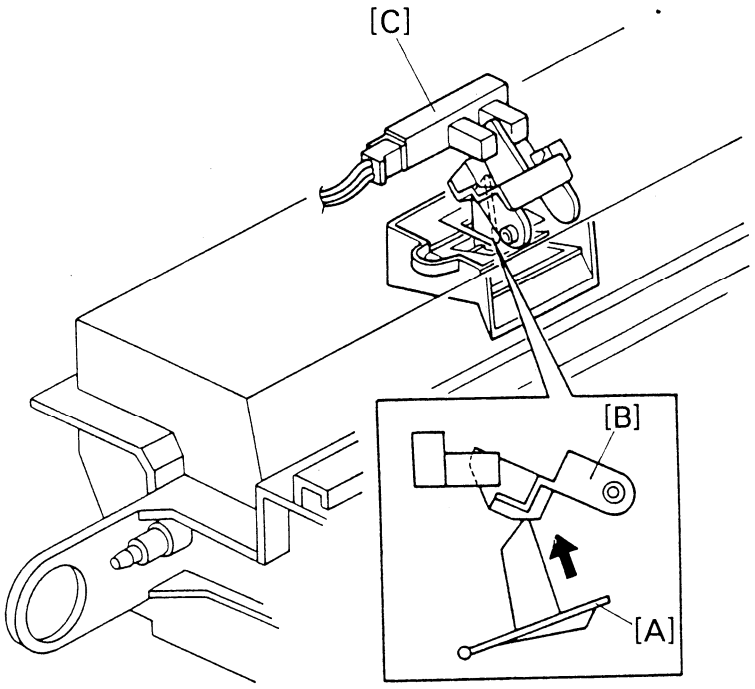
The cleaning pressure mechanism is shown above. When the cleaning solenoid [A] is energized, it turns the cleaning solenoid lever [B] counterclockwise (rear view).

The cleaning blade lever [C] is pressed by the cleaning solenoid lever [B], and turns counterclockwise. The cleaning blade holder then rotates and the cleaning blade [D] presses against the drum.

The cleaning blade is mounted by a single swivel screw [E] at its exact center of gravity. With this type of mounting the blade is set parallel and applies even pressure.

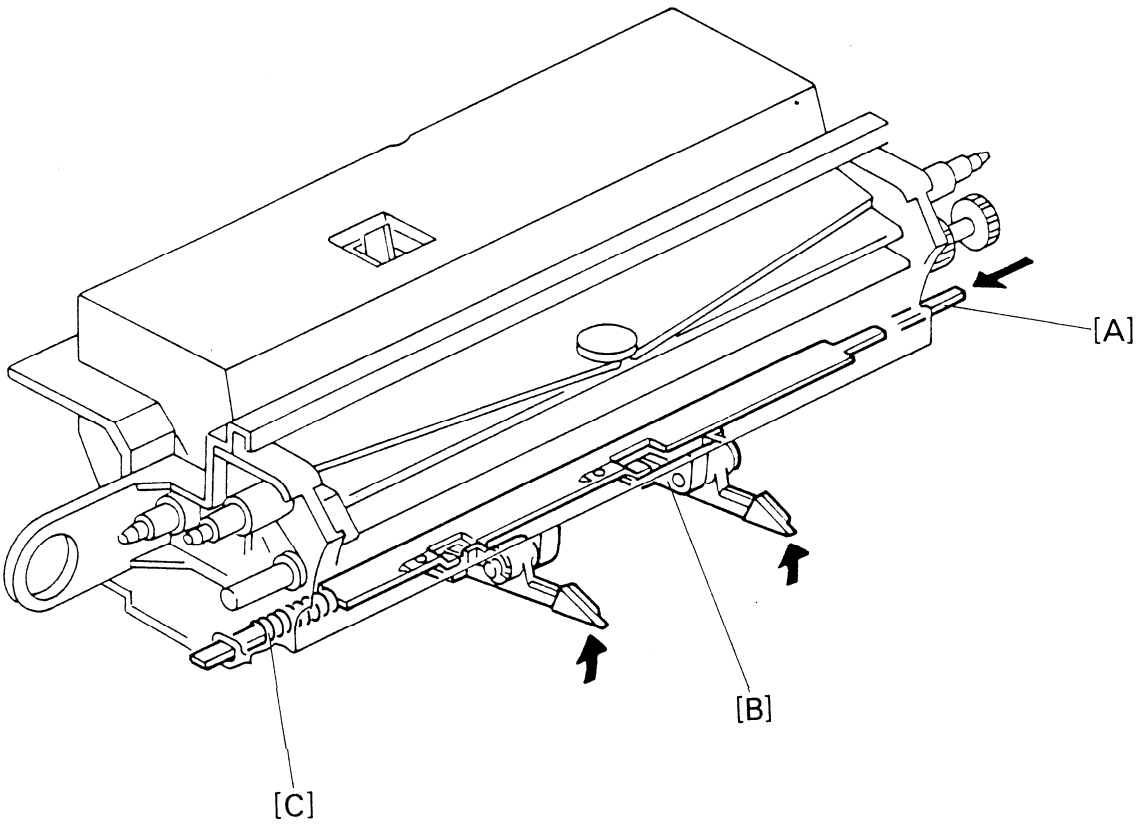
The cleaning solenoid is energized immediately after the Start key is pressed. It turns off one second after the main motor turns off.

4. TONER OVERFLOW DETECTION



The toner overflow detection mechanism stops copier operation when the used toner tank gets full. The capacity of the used toner tank is about 350 grams. When the tank gets full, the pressure of the used toner pushes up a movable plate [A] mounted in the top of the used toner tank. As this plate moves up, it raises the toner overflow actuator [B]. When the actuator moves into the toner overflow sensor [C], the CPU stops the copier and displays E7.

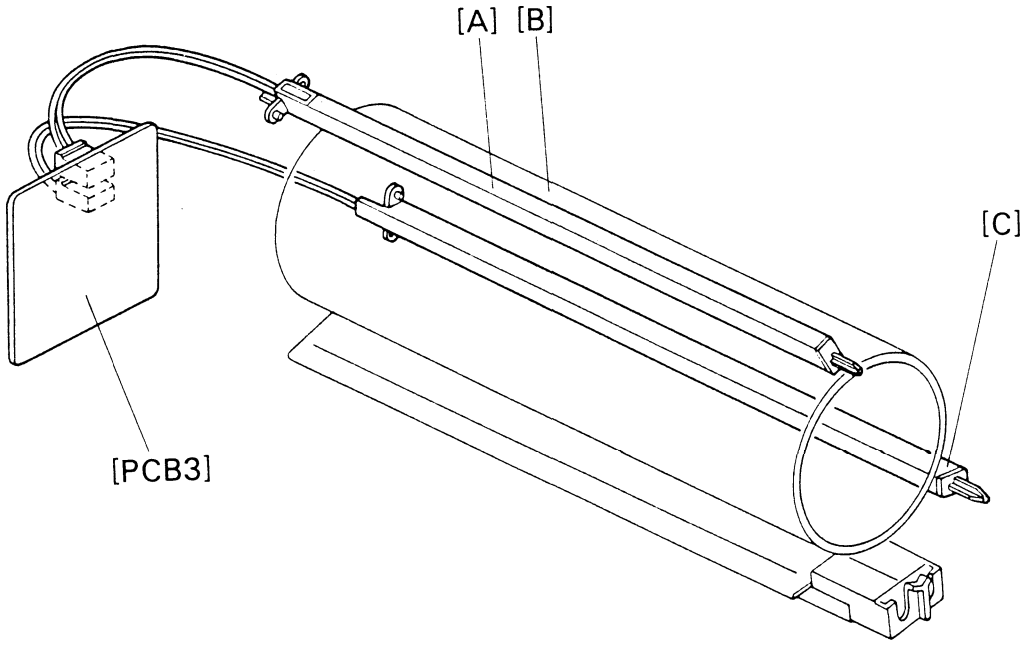
5. PICK-OFF MECHANISM



When the cleaning unit is inserted in the copier, the pawl lever [A] is pressed by the rear side plate of the copier and the rear portion of each pick-off pawl [B] drops into the groove of the pawl lever (due to its weight). The tip of the pawl goes up and contacts the drum.

When the cleaning unit is removed from the copier, a spring [C] moves the pawl lever to the rear side and the rear portion of the pick-off pawl moves to the flat surface of the pawl lever so that the tip of pawl moves away from the drum.

QUENCHING



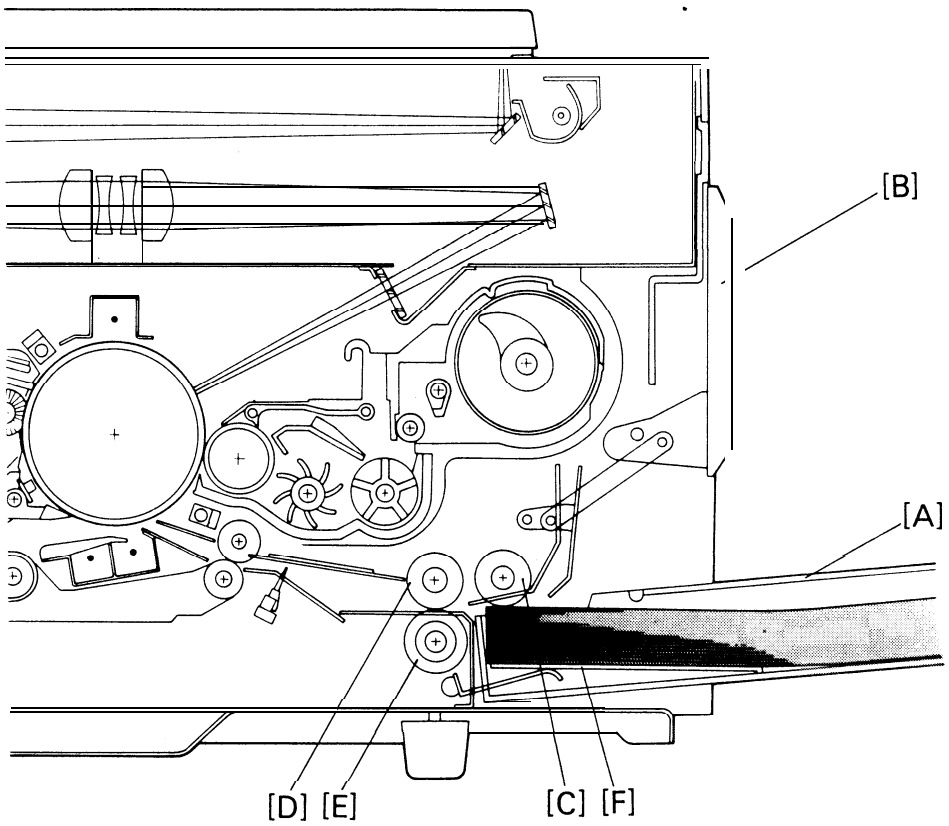
In preparation for the next copy cycle, light from the quenching lamp [A] neutralizes any charge remaining on the drum [B].

The neon lamp used for quenching is the same as the pre-transfer lamp (PTL) [C].

The circuit is the same as that of the PTL and the lamps are interchangeable. (See the section on the pre-transfer lamp circuit.)

PAPER FEED AND REGISTRATION

1. OVERVIEW

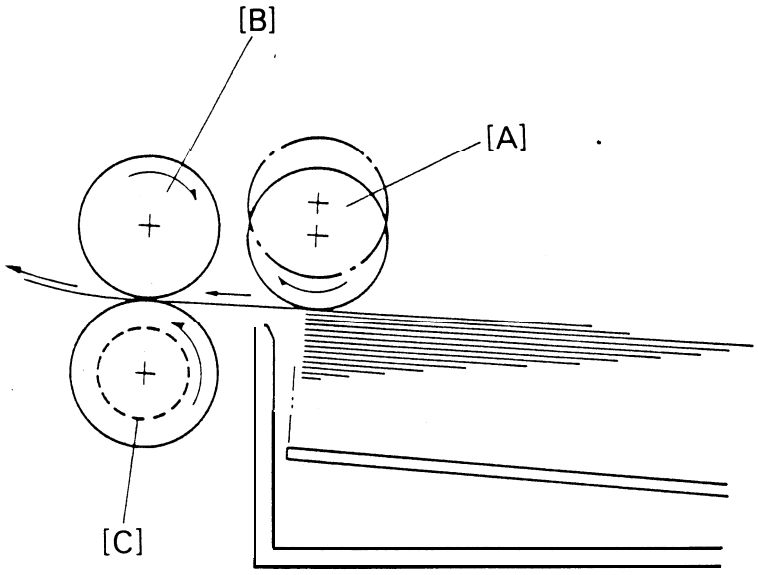


Paper feeds from either the cassette [A] or from the manual feed table [B] The capacity of the cassette is 250 sheets, and up to 50 sheets can be set at once on the manual feed table.

This copier uses three rollers for paper feed: a pick-up roller [C], a feed roller [D], and a reverse roller [E]. The bottom plate [F] inside the cassette is automatically lifted up when the Start key is pressed or when the copier changes from the warm-up condition to the ready condition. It stops when the paper stack pushes up the feeler of the paper lift sensor.

Rotation of the pick-up roller drives the top sheet of paper from the cassette to the feed and the reverse rollers. The feed and reverse rollers then take over the paper drive. If more than one sheet is fed by the pick-up roller, the reverse roller rotates in the opposite direction and prevents all but the top sheet from passing through to the registration roller.

2. ROLLER FUNCTION



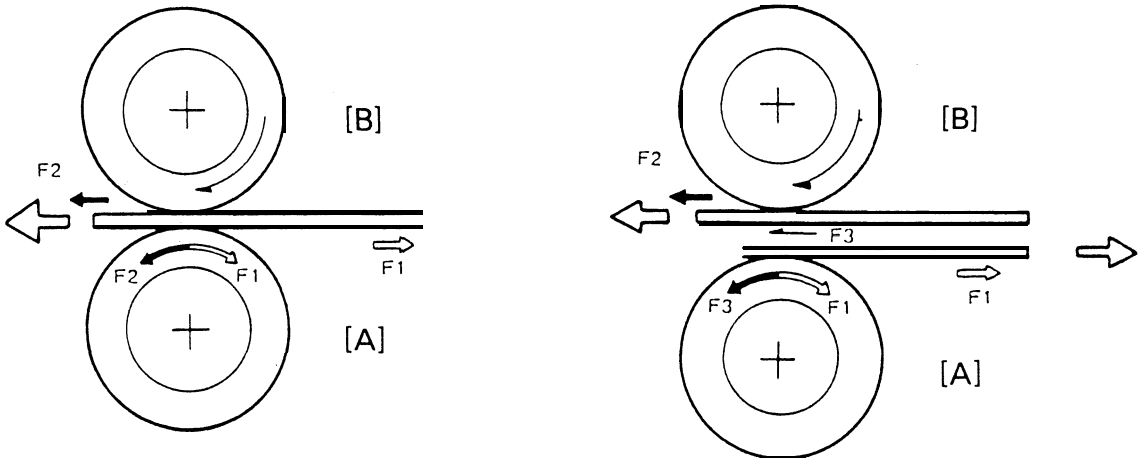
This copier uses an FRR (Feed + Reverse Roller) paper feed system which utilizes three rollers.

- Pick-up Roller -

The pick-up roller [A] is not in contact with the paper stack before it starts feeding paper. Shortely after the Start key is pressed, the pick-up roller drops down and feeds the top sheet between the feed [B] and the reverse rollers [C]. At almost the same time that the paper's leading edge arrives at the feed roller, the pick-up roller lifts off the paper stack so that it does not interfere with the operation of the feed and reverse rollers. The feed and reverse rollers then take over the paper feed process.

- Feed and Reverse Rollers -

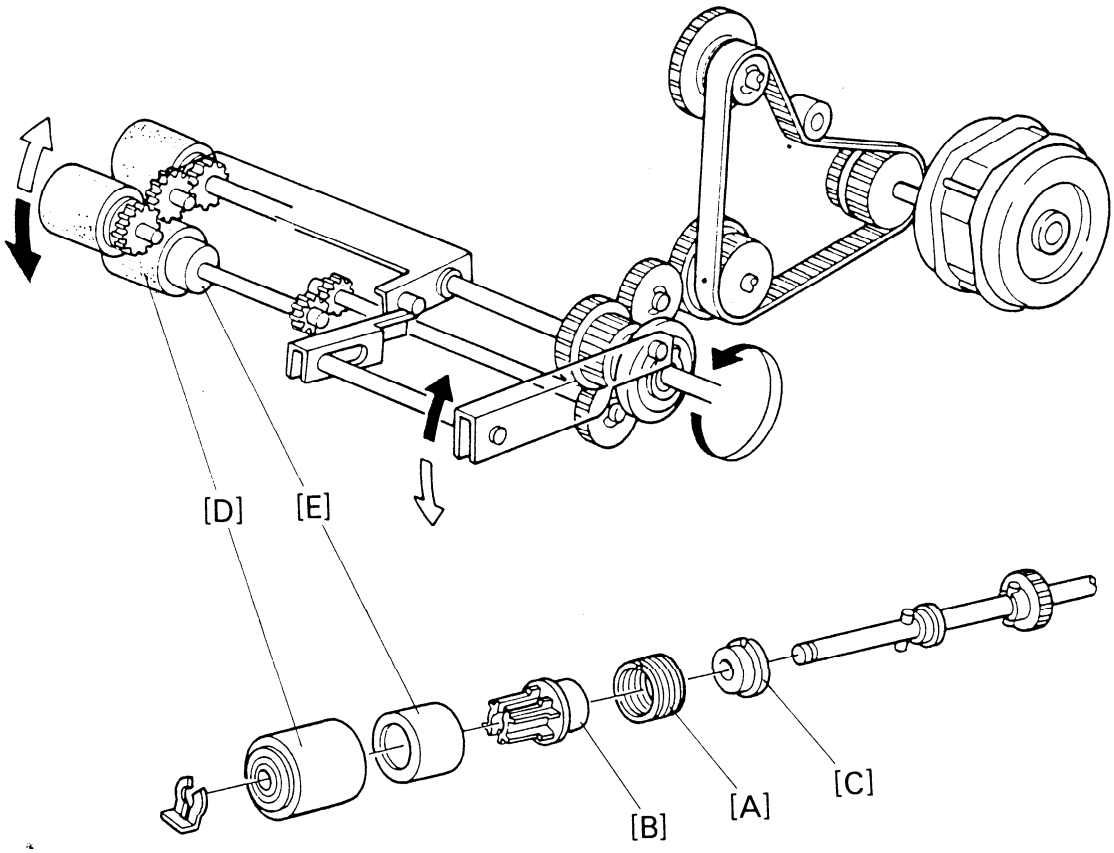
There is a one-way bearing inside the feed roller so it can turn only in one direction. The reverse roller is driven in the opposite direction to the feed roller. The reverse roller, however, is driven through a slip clutch (torque limiter clutch) which allows it to turn in either direction depending on the friction between the rollers. A spring keeps the reverse roller in contact with the feed roller.



The direction that the reverse roller [A] turns depends on the frictional forces acting on it. The slip clutch applies a constant clockwise force (F1). When there is a single sheet of paper being driven between the rollers, the force of friction between the feed roller [B] and the paper (F2) is greater than **F1. So,** the reverse **roller turns counterclockwise.**

If two or more sheets are fed between the rollers, the forward force on the second sheet (F3), becomes less than **FI because the coefficient of friction between** the two sheets is small. So, the reverse **roller starts turning** clockwise **and drives the** second sheet back to the cassette.

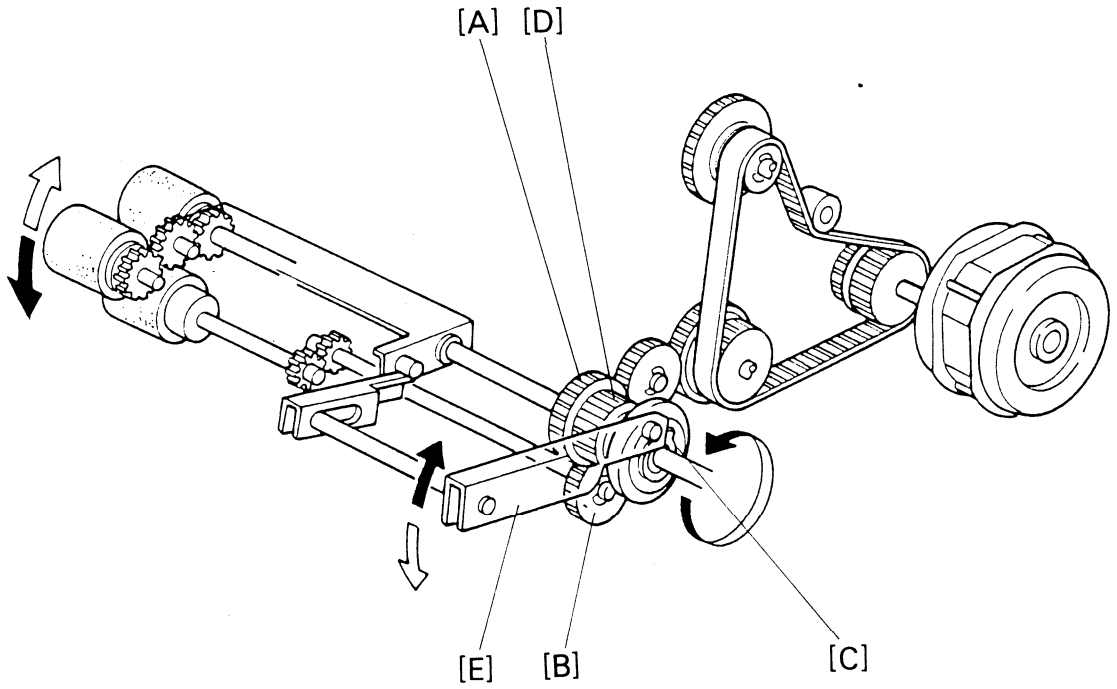
3. SLIP CLUTCH MECHANISM



D: Reverse Roller
E: Slip Clutch Cover

The slip clutch consists of two hubs connected by a drive spring [A]. The spring grips the output hub [B] tightly and grips the input hub [C] loosely. It will slip if the resistance to rotation is too great. The hubs and spring are precisely machined and slip when a single sheet of paper feeds between the feed roller and reverse roller. (See the previous page.)

4. ROLLER DRIVE MECHANISM



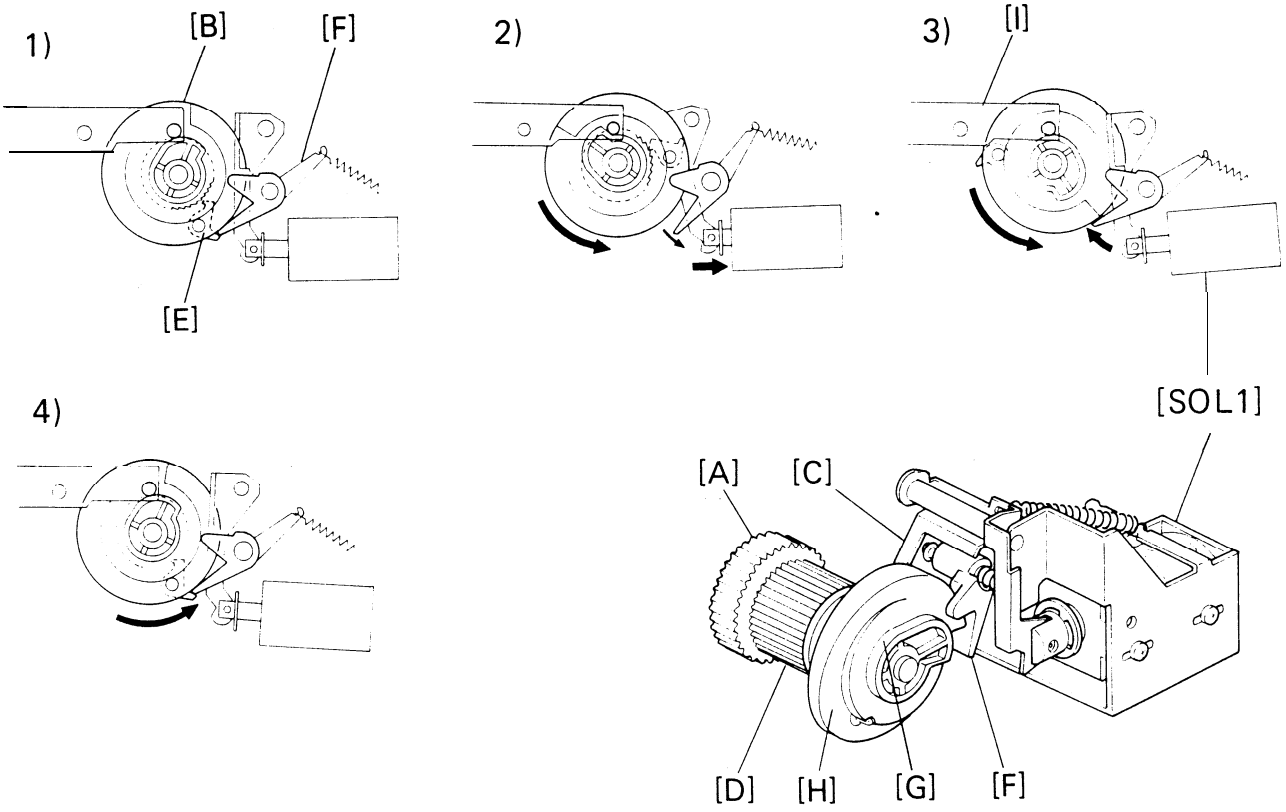
The mechanism shown above drives the feed rollers.

Main motor rotation goes to the paper feed drive gear [A] via the timing belt and an idle gear. The paper feed drive gear turns the reverse roller drive gear [B].

To start paper feed, the CPU turns on the paper feed solenoid. This releases the ratchet pawl (see the next page) from the paper feed cam [C] and the paper feed clutch [D] (spring clutch) starts turning the feed roller shaft. As the paper feed cam turns, it presses up the pick-up roller lever [E], causing the pick-up roller to lower onto the stack of paper.

The paper feed solenoid is turned on 600 ms after the Start key is pressed. It is turned off about 204 milliseconds after the leading edge of the paper reaches the registration sensor.

- Cam Rotation Mechanism -

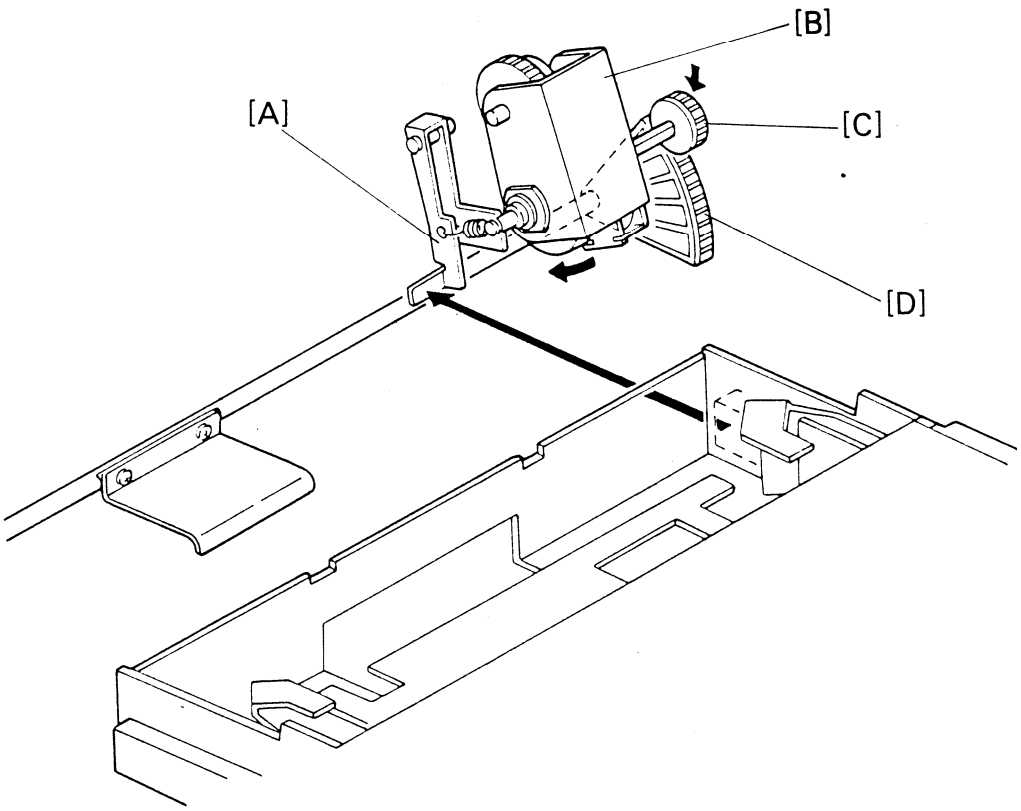


The paper feed drive gear [A] turns while the main motor is on. However, the paper feed cam [B] does not turn while the paper feed solenoid [SOL1] is off because the clutch pawl [C] is engaged with the sleeve of the paper feed clutch [D], which is a spring clutch. Also, the ratchet pawl [E] on the cam is held by the stopper [F], which keeps the pawl from engaging with the ratchet.

When the paper feed solenoid energizes, it pulls the clutch pawl away from the sleeve of the paper feed clutch, allowing the clutch to engage. Rotation then passes to the feed and pick-up rollers. As the clutch pawl is pulled away from the clutch sleeve, it also pulls the stopper away from the ratchet pawl, allowing the ratchet pawl to engage with the ratchet. The paper feed cam then starts turning.

The paper feed cam has two cam surfaces: a lift cam [G] and a step cam [H]. As the cam turns, the lift cam portion moves the pick-up roller lever [I] down and up to bring the pick-up roller into contact with the stack of paper. At the same time the step cam portion pushes the stopper out so that it is no longer held away from the rim of the cam by the clutch pawl. When the cam has finished one rotation the stopper disengages the ratchet pawl from the ratchet, causing the cam to stop turning. However, the feed roller continues to turn until the paper feed solenoid turns off.

5. LIFT MECHANISM



When the cassette is inserted into the copier the cassette actuator lever [A] is pushed clockwise by the cassette. The paper lift clutch unit [B] then moves down and the paper lift gear [C] engages with the sector gear [D].

Under the following conditions, the CPU checks the paper lift sensor to see if the paper is at the feed position.

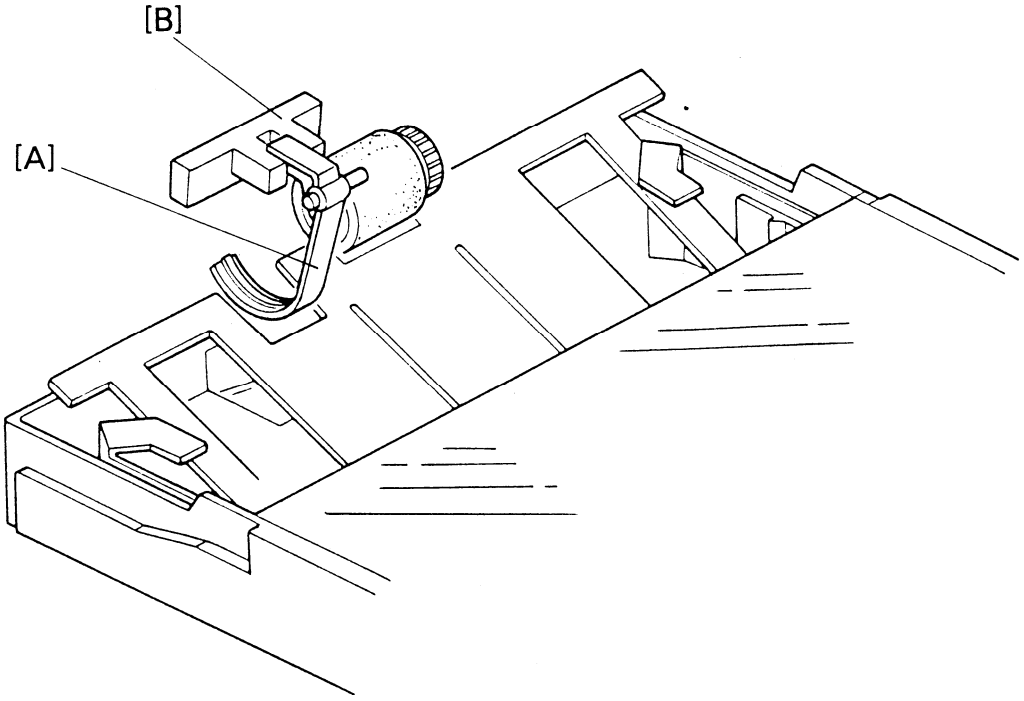
1. When the Start key is pressed.
2. When the warm-up condition changes to the ready condition.
3. When the manual feed table is closed.

If the paper has not been raised to the feed position, the CPU turns on the paper lift clutch. The paper lift gear turns the sector gear and the bottom plate raises until the top sheet pushes up the paper lift sensor feeler.

When the paper lift sensor is actuated, the CPU turns off the paper lift clutch.

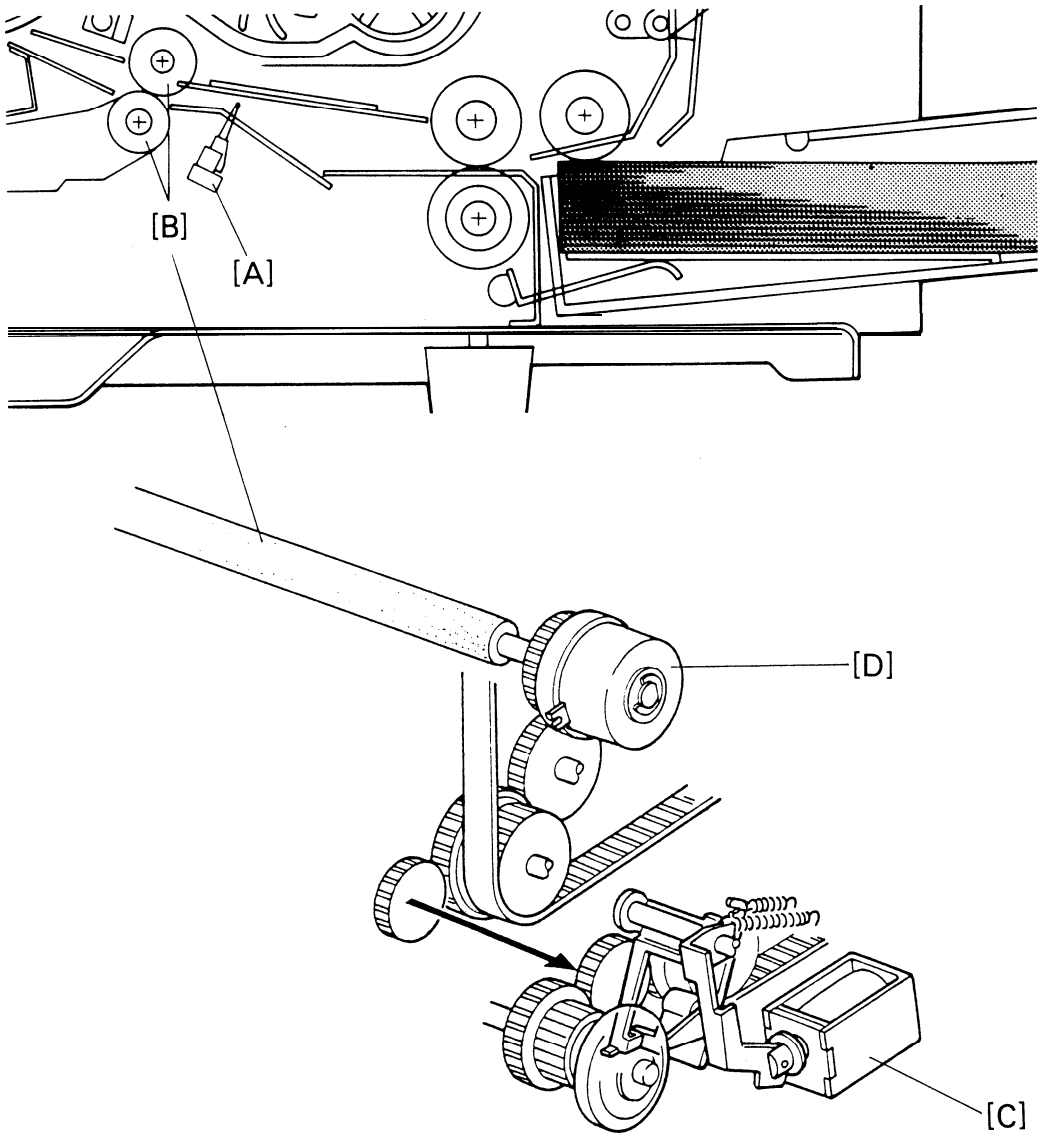
As paper is fed into the copier, the level of the paper stack gets lower. If the level becomes too low, the paper lift sensor is actuated and the CPU energizes the paper lift clutch until the top sheet raises the feeler to de-actuate the paper lift sensor again. This ensures that the paper is always at the correct feed height.

6. PAPER END DETECTION



When the cassette runs out of paper, the paper end feeler **[A]** drops through a **slot in the cassette's** bottom plate. **As it** drops, the paper end sensor [B] **is actuated by the feeler. The paper end sensor then sends a HIGH signal to CN117-7 of the main PCB. The** Add **Paper indicator then** turns on, the Start key turns red, and the machine stops after the copy cycle is finished.

7. FEED AND REGISTRATION TIMING

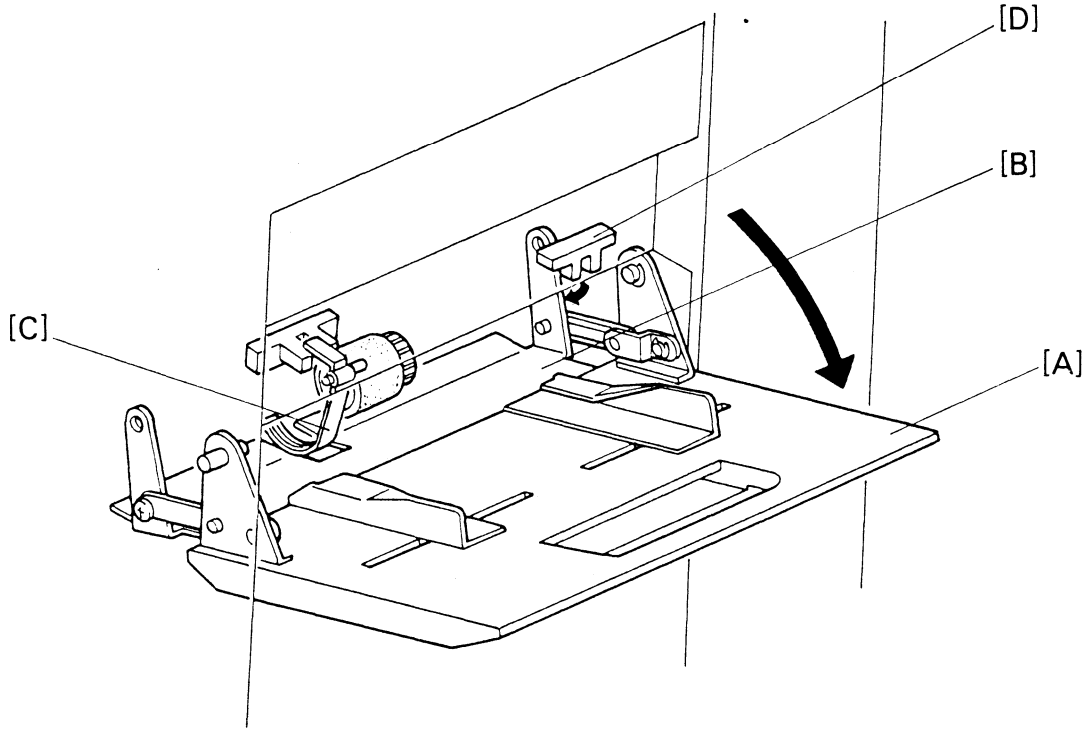


- Skew Correction -

The registration sensor [A], which is positioned just before the registration rollers [B], sets the paper feed stop timing. The paper feed solenoid [C] stays on for 204 milliseconds after the leading edge of the paper activates the registration sensor. At the end of the 204 ms period, the CPU turns off the feed clutch. This delay allows time for the paper to press against the registration rollers and buckle slightly to correct skew.

The CPU energizes the registration clutch [D] 2.5 seconds after the Start key is pressed (about 470 milliseconds after the leading edge of the paper reaches the registration sensor).

8. MANUAL FEED



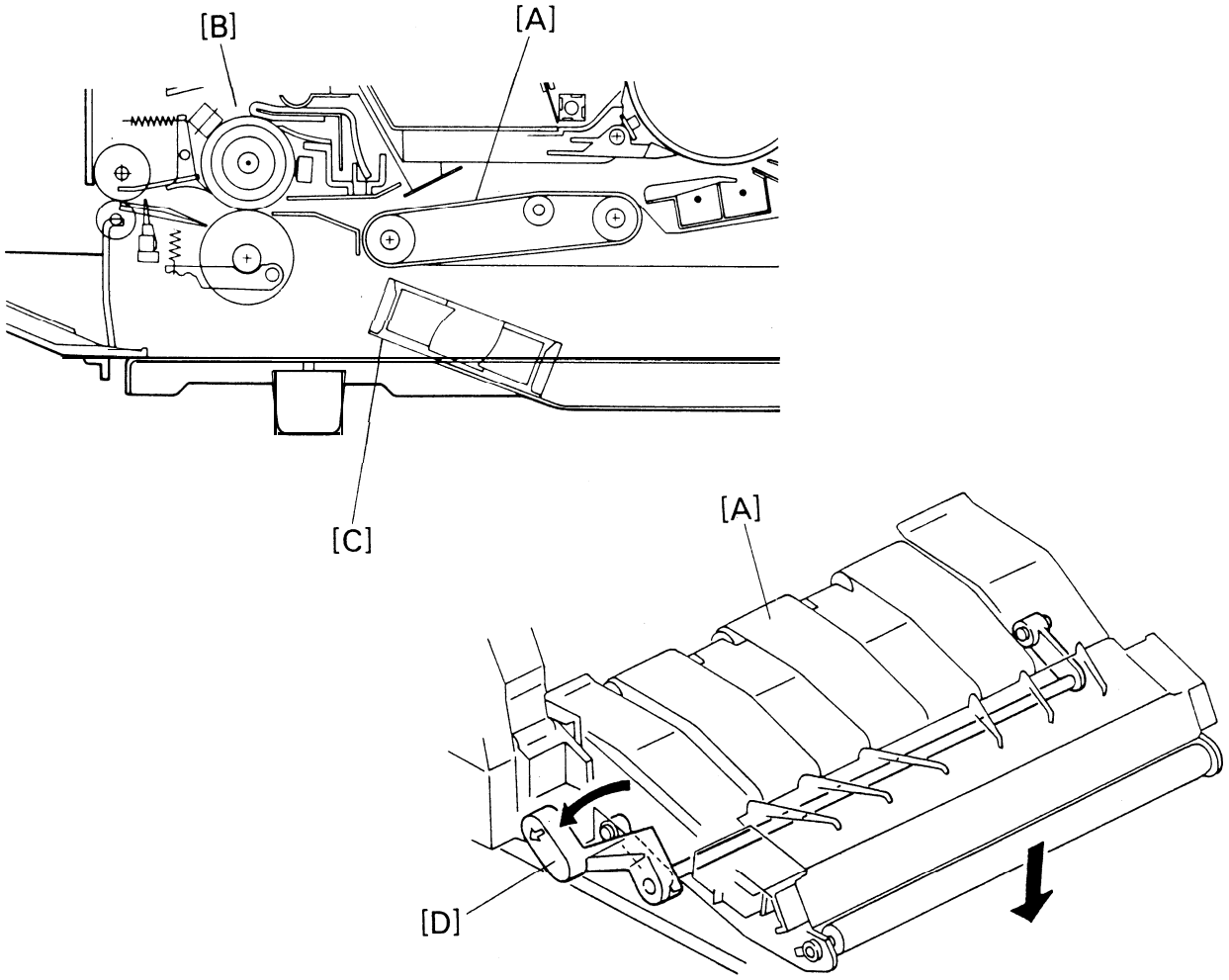
The manual feed mode allows multi-feeding without a cassette. (Maximum paper quantity is 50 sheets of normal weight paper.) This is accomplished by the manual feed table.

When the manual feed table [A] is opened, the manual feed plate [B] rotates down and becomes an extension of the manual feed table. At this time, the cassette bottom plate drops and the paper end feeler [C] drops through a slot in the manual feed plate. The manual feed sensor [D] sends a signal to the CPU at the same time and the CPU shifts to manual feed mode. The CPU detects a paper end condition and lights the Load Paper indicator.

When paper is inserted into the manual feed table, the paper end sensor is de-actuated. The CPU then turns off the Load Paper indicator.

PAPER TRANSPORT

1. OVERVIEW

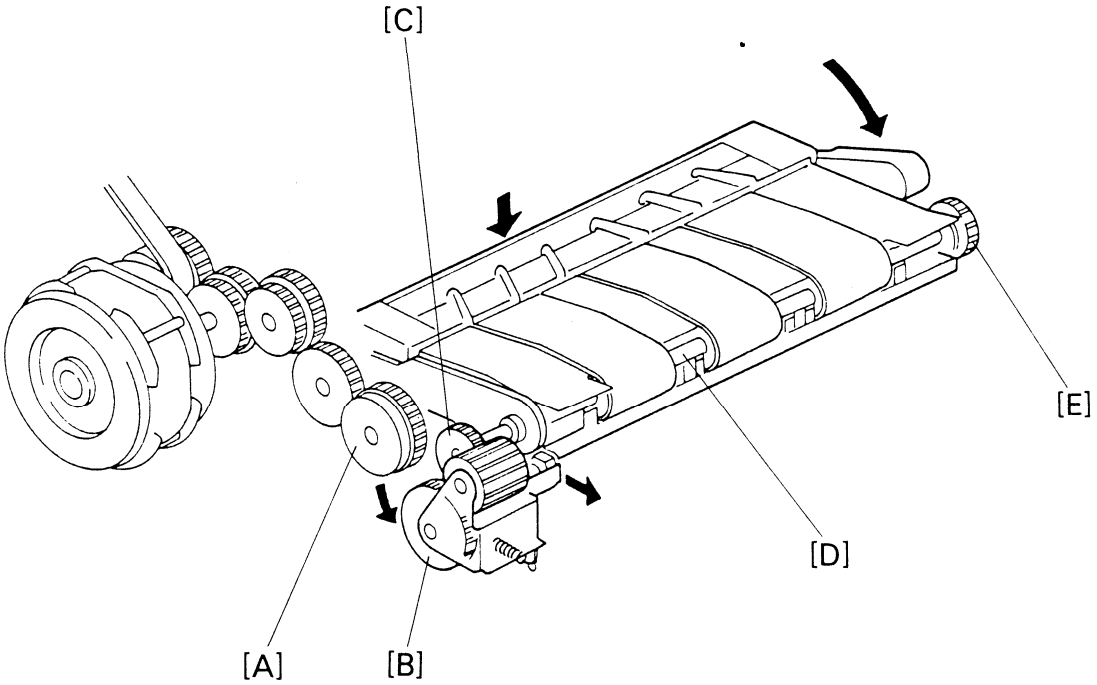


The copy paper rides on the transport belts [A] to the fusing unit [B].

A vacuum fan [C] holds the paper firmly against the belts so that there is enough friction between the paper and the belts for smooth transportation. The transport belts are directly gear driven (no clutch); so, they turn constantly when the main motor is on.

The transport unit has a release lever [D] and can be pressed down for easy jam removal.

2. **BELT DRIVE MECHANISM**



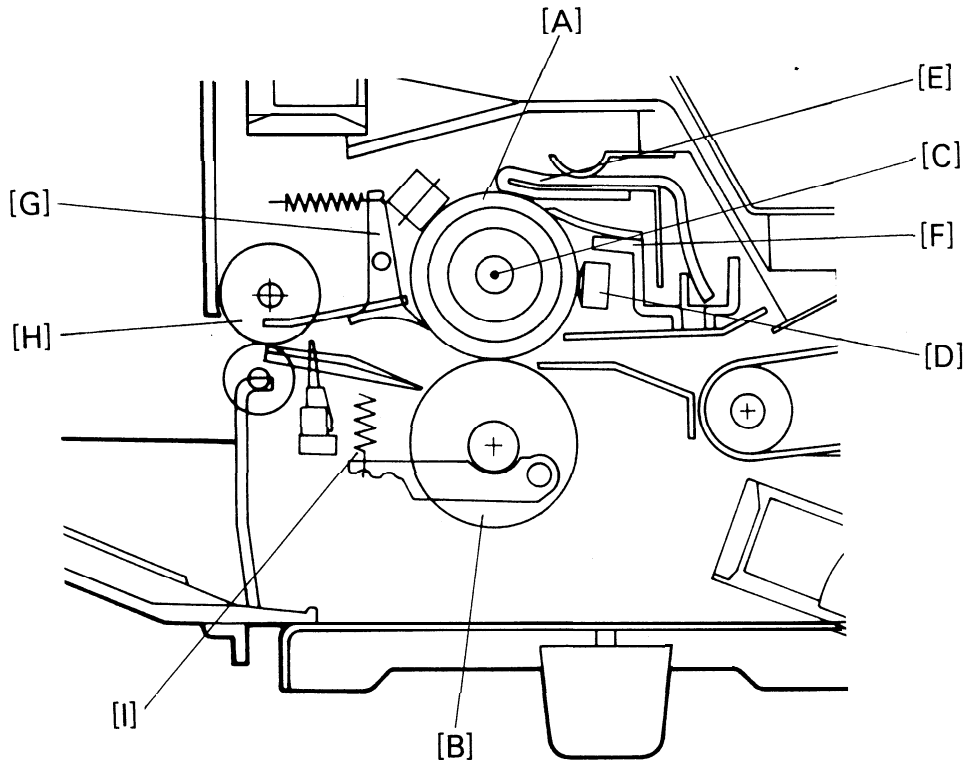
When the main motor is on, an idle gear [A] turns the release gear [B]. The release gear turns the rear transport gear [C], which is mounted on the transport belt drive shaft [D].

When the transport unit release lever is turned down, the release gear disengages from the idle gear, preventing operation.

The front transport gear [E] on the front end of the transport belt drive shaft drives the oil pump mechanism.

IMAGE FUSING AND PAPER EXIT

1. OVERVIEW



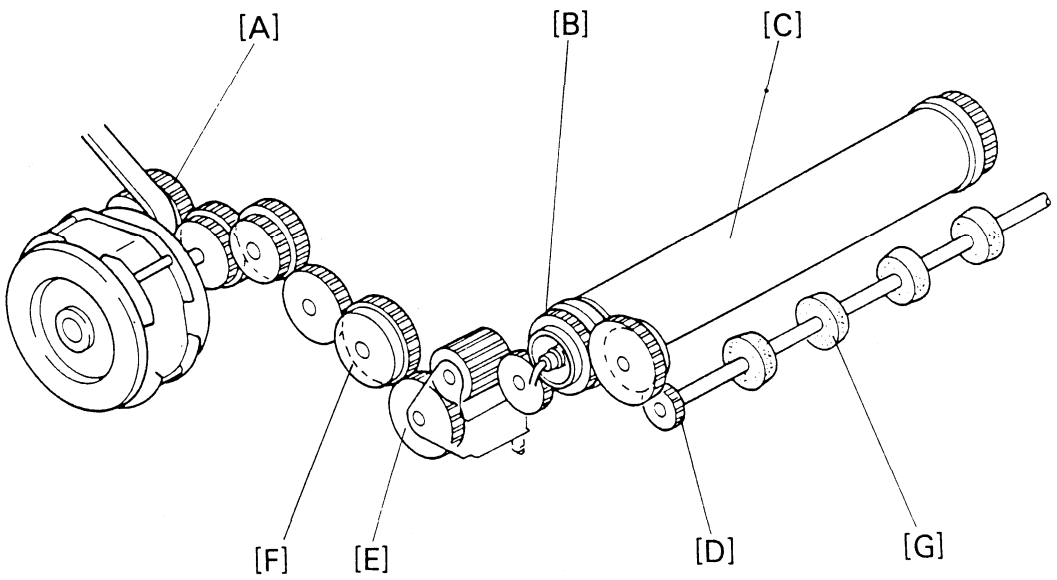
The image is fused to the copy paper by two fusing rollers which apply heat and pressure. The hot roller [A] is made of teflon, and the pressure roller [B] is made of silicone rubber. Pressure is constantly applied between the rollers. There is no pressure release mechanism. However, the roller pressure can be changed by adjusting the position of the pressure lever tension springs [I].

The fusing lamp [C], which is located at the hot roller axis, is turned on and off to maintain the operating temperature. The temperature control circuit monitors the hot roller surface temperature through a thermistor [D].

The oil supply pad [E] applies silicone oil to the hot roller. The oil blade [F] then spreads the oil evenly across the hot roller. The oil reduces the adhesion between paper and the hot roller (reducing misfeeds), reduces paper curl, and helps to keep the roller clean by reducing the amount of toner transferred to the hot roller surface. The oil supply pad also works as the hot roller cleaning pad.

The hot roller strippers [G] separate the copy from the hot roller and direct it to the fusing exit rollers [H].

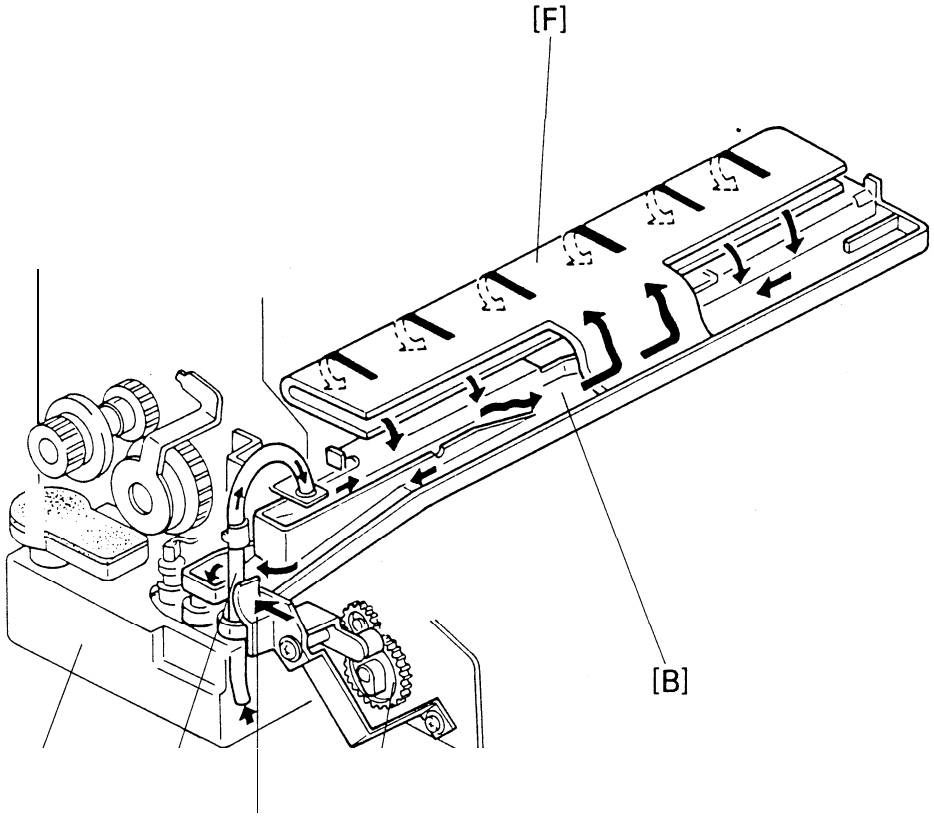
2. ROLLER DRIVE MECHANISM



The main motor gear [A] transfers the rotation to the rear hot roller gear [B] through a series of idle gears as shown above. The pressure roller turns due to the friction of the hot roller [C]. The upper exit roller gear [D] is turned by the rear hot roller gear through an idle gear.

However, when the transport belt unit is not set properly, the release gear [E] does not engage the idle gear [F] that drives it; so, the hot roller and the exit rollprs [G] do not rotate.

3. OIL SUPPLY AND CLEANING



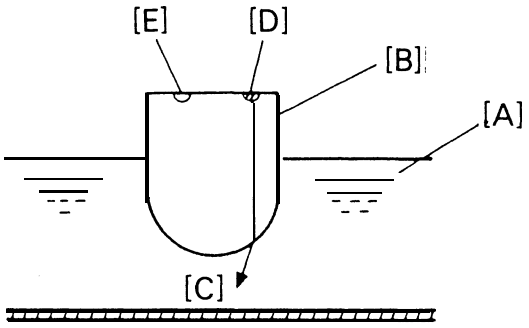
Silicone oil is applied to the hot roller to help prevent toner and paper from sticking to the hot roller, to reduce paper curl, and to help in roller cleaning.

A small one-way valve pump moves the oil from the oil tank [A] (capacity 210 cc) to the oil sump [B]. The oil pump lever [C] alternately presses and releases the rubber sleeve [D] between the valves as the oil cam [E] turns.

The felt wick soaks up oil and supplies it to the top of the oil supply pad [F]. The oil supply pad then applies the oil to the hot roller as the roller turns. The oil blade spreads and levels the oil on the hot roller. Excess oil flows along the blade toward the ends of the roller, and returns to the oil sump. Oil flows out through a hole in the bottom of the oil sump and returns to the oil tank.

The oil supply pad both distributes oil to the hot roller and removes toner and foreign matter from the hot roller surface.

4. **OIL END SENSOR**

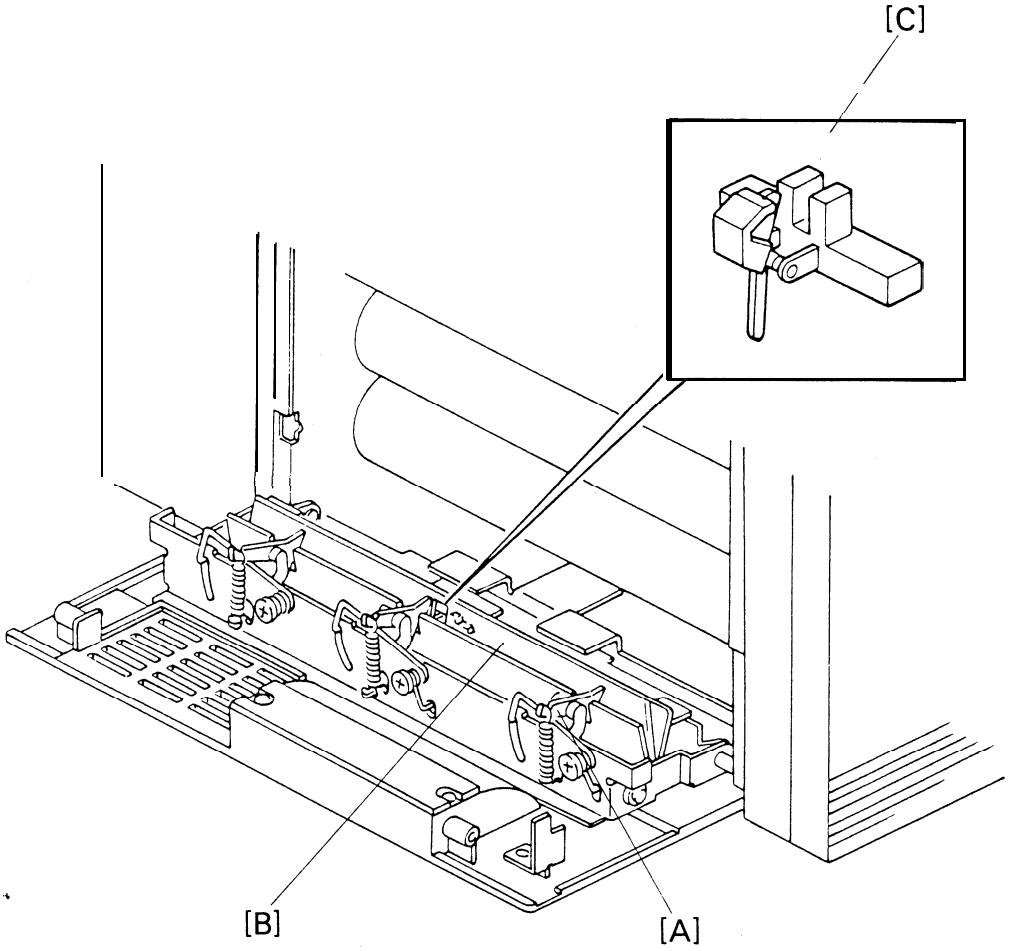


Oil end detection is based on the difference between the index of refraction of air and the index of refraction of silicone oil.

The index of refraction of silicone oil [A] (1.40) is very near that of the sensor casing (1.49); so, the oil-casing interface has a very large critical angle. As a result, when oil covers the sensor [B], light [C] from the LED [D] is only refracted slightly at the boundary between the casing and the oil. The phototransistor [E] stays off.

However, the index of refraction of air is much lower (1.00). So, the critical angle for the air-casing interface is much less than that of the oil-casing interface. Light from the LED strikes the air-casing interface at an angle greater than the critical angle. So, when oil runs out, light from the LED reflects instead of refracting and activates the phototransistor.

5. PAPER EXIT ASSEMBLY



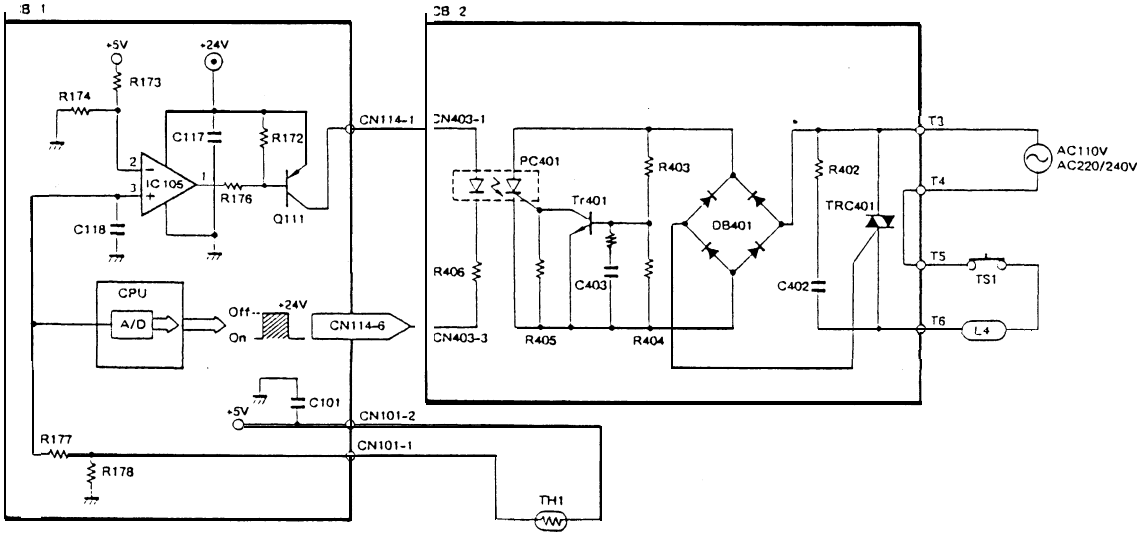
The paper exit assembly includes the hot roller strippers [A], the exit guides [B], the exit sensor [C], the exit rollers, and the antistatic brush.

The hot roller strippers prevent copy paper from wrapping around the hot roller. They slide between the paper and the roller, and then direct the paper to the exit rollers.

The stripper release springs move the strippers between the exit guides when the exit assembly is opened. This prevents the user from possibly scratching himself on the strippers or damaging the strippers when removing misfed paper.

The lower fusing exit guide prevents the copy paper from wrapping around the pressure roller. Although the lower fusing exit guide is not touching the pressure roller, it will catch the leading edge of copy paper due to the face curl of the paper. (The face curl is caused by the pressure between the teflon hot roller and silicone rubber pressure roller.)

6. **FUSING CONTROL**



Above is a schematic of the fusing lamp control circuit. The circuit has both ac and dc components, which are coupled through a photocoupler.

- Fusing Lamp ON/OFF -

To turn on the fusing lamp, the CPU supplies a LOW at CN114-6. The LOW signal turns on a photocoupler, which turns on the triac controlling the ac voltage to the lamp. The CPU decides whether to apply a continuous LOW or a continuous HIGH (lamp off) at CN114-6 based on the input from the thermistor at CN101-1. The voltage at CN101-1 increases as the temperature of the hot roller increases.

- Overheat Protection 1-

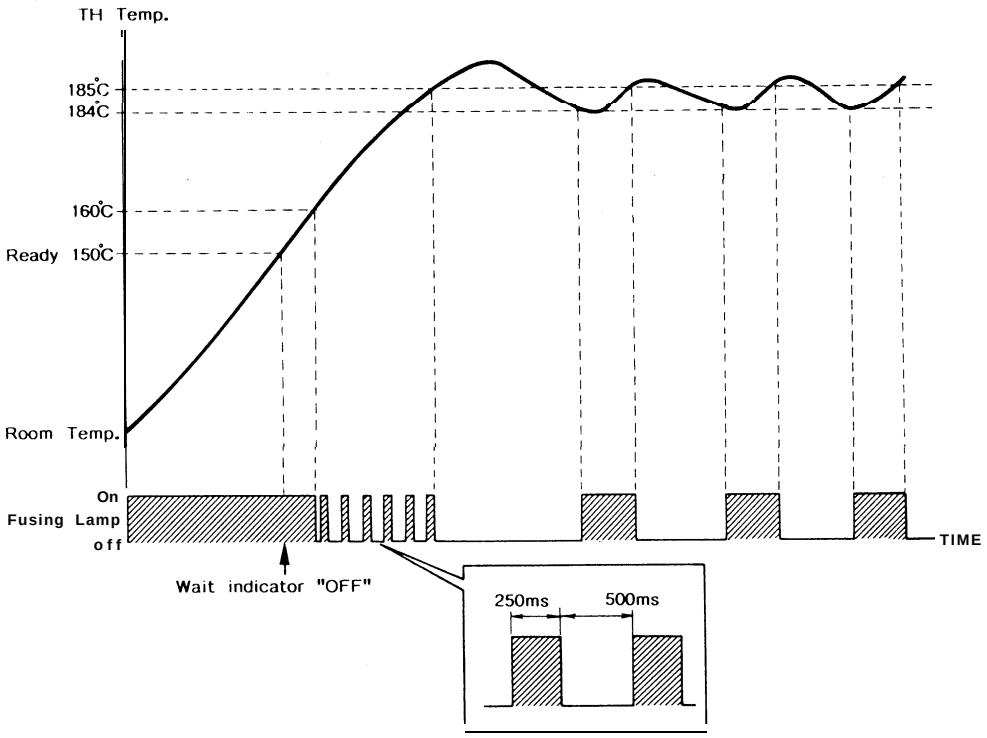
IC105 and Q111 form an overheat protection circuit. When the fusing unit is operating within the normal range, pin 1 of IC105 stays LOW. Therefore, Q111 stays on, allowing PC401 to operate.

If the hot roller's temperature reaches 230 degrees, the resistance of the thermistor becomes approximately 1 kilo-ohm. At that point pin 1 of IC105 becomes HIGH, turning off Q111 and preventing PC401 from operating.

- Overheat Protection 2-

In case the thermistor overheat protection circuit fails, **a thermoswitch is in** stalled in series with the fusing lamp. If the temperature of the thermoswitch reaches 169 degrees, the thermoswitch opens.

- Warm Up Sequence -



The above illustration shows how the fusing lamp is controlled to warm up the hot roller when the power is turned on.

When the main switch if turned on full power is applied to the fusing lamp. When the hot roller temperature reaches 150 degrees, the ready beeper sounds and the Start key turns green. At this time copying is possible.

Full power application continues until the temperature reaches 160 degrees. At this time the CPU changes to a switching control cycle in which the fusing lamp is turned on for 250 milliseconds and off for 500 milliseconds. Switching control continues until the temperature reaches 185 degrees. Switching control is used for the final part of fusing warm-up to prevent excessive overshoot of the fusing roller temperature.

After warm-up is complete, the fusing lamp is turned on when the temperature drops below 184 degrees and it is turned off when the temperature rises above 185 degrees.

7. SERVICE CALL CONDITION

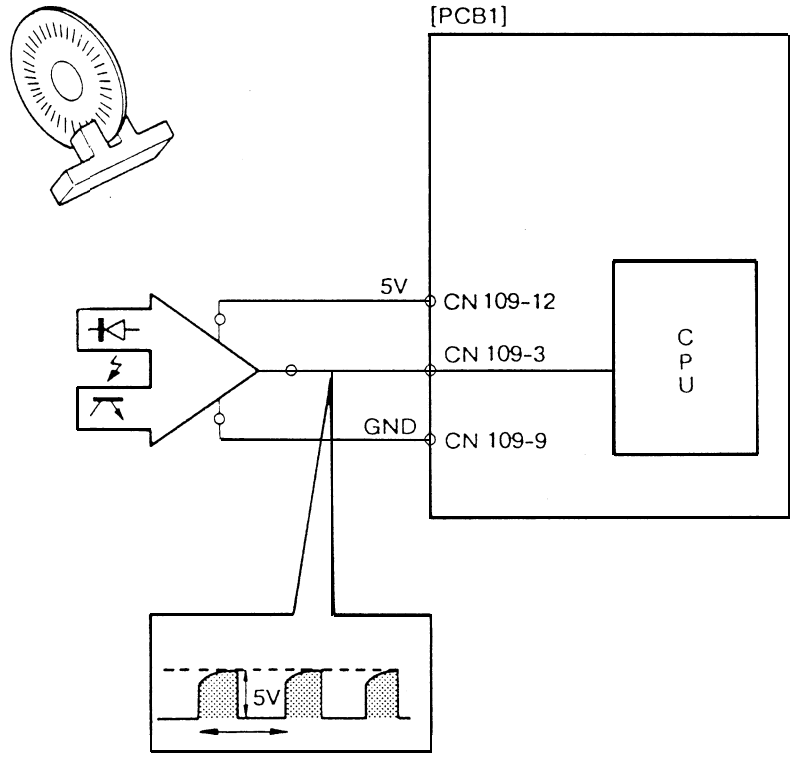
- Code E5 -

The following three conditions will cause the CPU to display E5 and prevent copier operation.

- The hot roller temperature does not increase at least 2 degrees within 10 seconds after the power is turned on. The most probable cause is an open thermistor circuit.
- The hot roller temperature does not reach 140 degrees within 75 seconds after the power is turned on. The most probable cause is an open fusing lamp or open thermoswitch.
- The hot roller temperature goes above 230 degrees. The most probable cause is a thermistor short.

OTHER MECHANICAL AND ELECTRICAL COMPONENTS

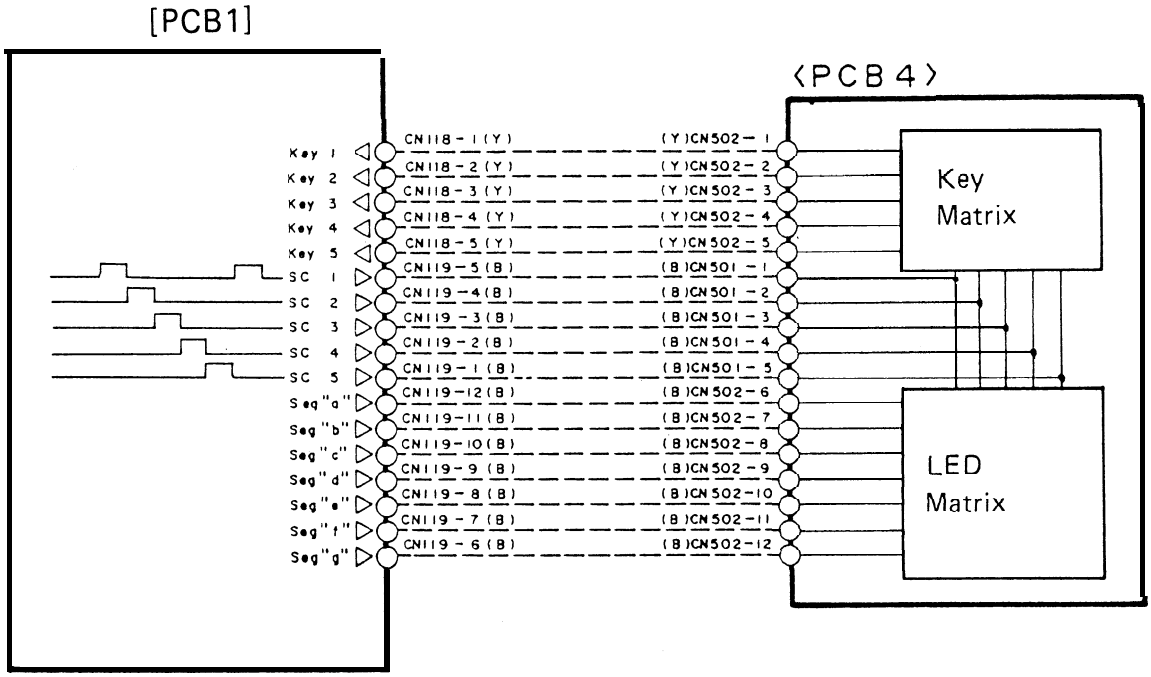
1. PULSE GENERATOR



The CPU controls the timing of all machine operations based on how many pulses it receives from the pulse generator. Pulses are generated by the rotation of a notched disk within a photointerrupter. As **the** disk rotates, light from the LED activates the phototransistor each time a notch comes between them. The pulse interval is 6.37 milliseconds.

If during the copy cycle no pulse is received for a 0.7 **second interval,** the main CPU will stop the machine and display E6.

2. OPERATION PANEL CIRCUIT

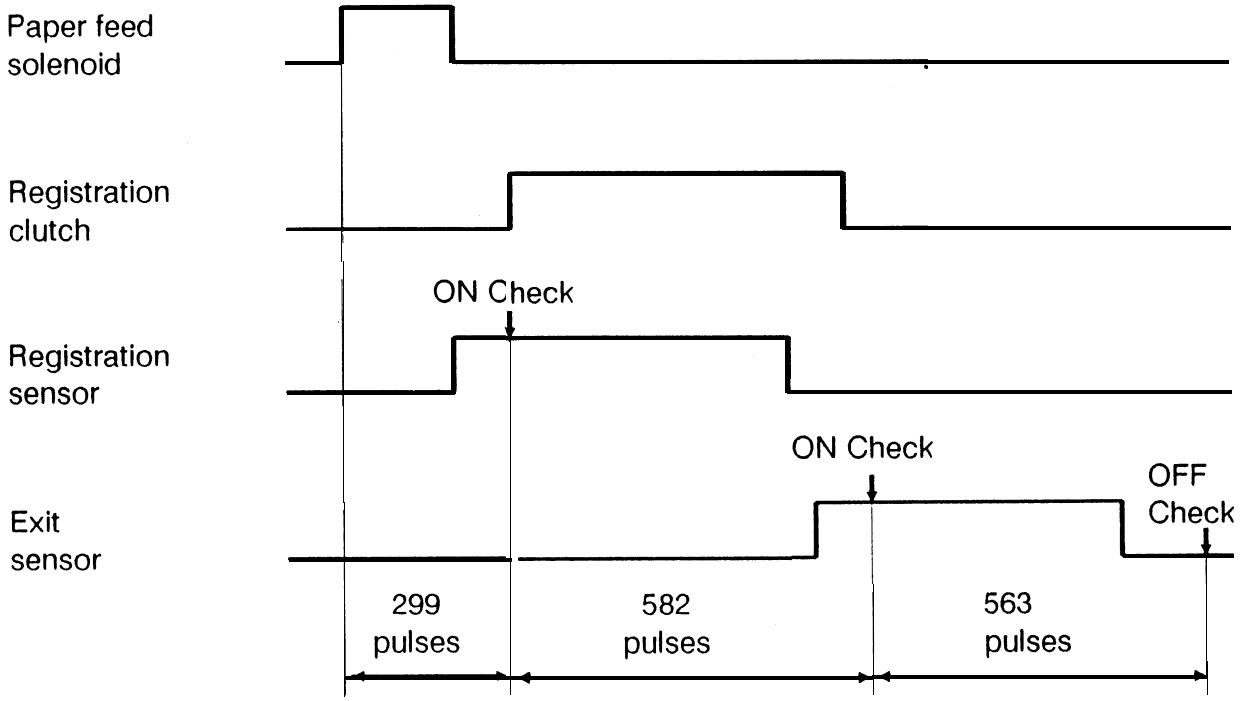


The main PCB [PCB1] drives the operation panel with five scan signals (sc1 through sc5). These scan signals go through the key matrix and the LED matrix on the operation panel PCB [PCB4].

All display elements on the operation panel are LEDs. To turn on a specific LED, the CPU pulses the appropriate segment line (Seg "a" through Seg "g") to LOW at the same time that the connected scan signal line pulses HIGH.

Also, each time a scan signal goes to the operation panel PCB, the CPU checks the five key input lines (Key 1 through Key 5). If one of these lines goes HIGH, it means that the connected key on the operation panel was pressed.

3. MISFEED CHECK TIMING

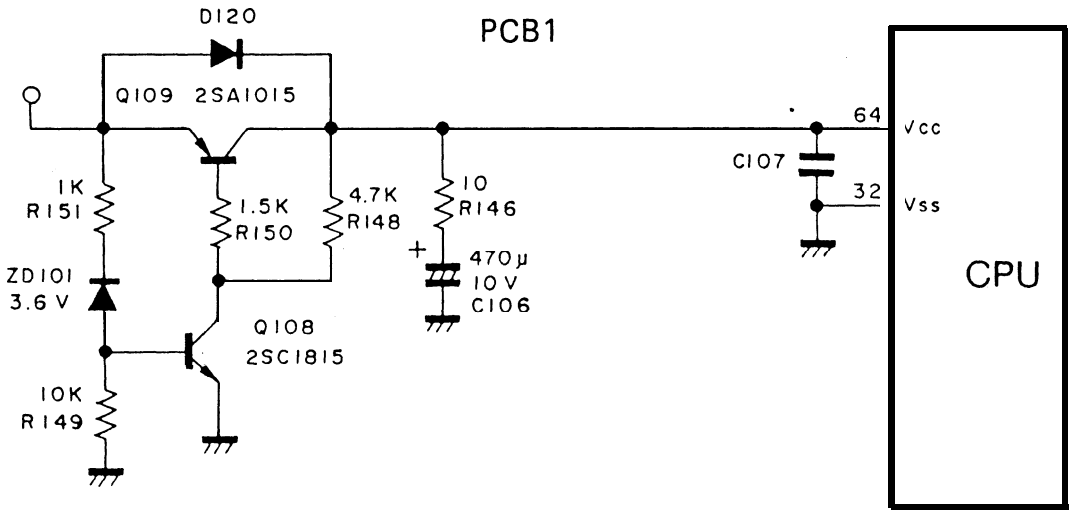


The first jam check (registration sensor ON check) is 299 pulses after the paper feed solenoid turns on. If the paper has not arrived at the registration sensor by this time, the CPU determines that there has been a misfeed.

The counter for the second jam check (the exit sensor ON check) starts when the registration clutch turns on. If the paper does not activate the exit sensor before the count reaches 582 pulses (3.7 seconds) a jam condition exists.

The counter for the third jam check (the exit sensor OFF check) starts when the exit sensor turns on. If the exit sensor is still on 563 pulses (for A4 or letter copies) after the paper activates it, a jam condition exists. (The OFF check is at 658 pulses for folio or legal size copies.)

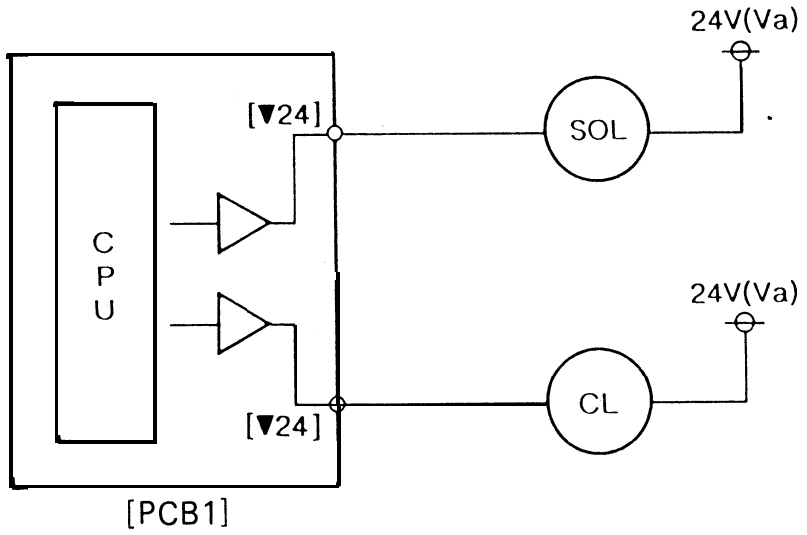
4. **DATA BACK-UP**



The main board has a back-up circuit. If the user opens the front cover to clear misfed paper or to add toner/silicone oil, the back-up system works to prevent any data from being lost due to power loss.

To hold data, pin 40 of the CPU must be supplied with + 5 volts. When power is supplied, C106 charges. If the +5 volt power supply stops, C106 supplies + 5 volts to the CPU. Cl 06 provides data back-up power for at least 15 minutes.

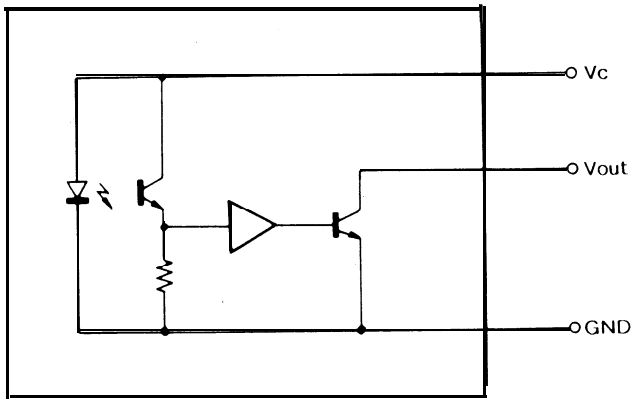
5. OPERATION OF ELECTROMAGNETIC DEVICES

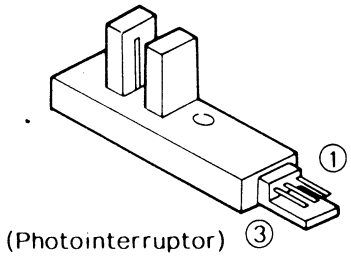


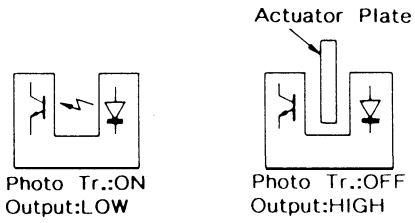
To energize an electromagnetic device, 24 volts is supplied to one side of the component. The main board then supplies a LOW trigger signal to the other side to turn it on at the appropriate time. The following components operate in this way.

Forward Clutch
Reverse Clutch
Registration Clutch
Toner Supply Clutch
Paper Lift Clutch
Paper Feed Solenoid
Cleaning Solenoid
Vacuum Fan
Exhaust Blower
Total Counter

6. PHOTOINTERRUPTER OPERATION







A photointerrupter sensors consist of a plastic encapsulated LED and phototransistor separated by an open slot. When the slot is empty, light from the LED activates the phototransistor and the sensor's output signal becomes LOW. When an actuator plate enters the slot, light from the LED is blocked and the output becomes HIGH.

The following sensors are photointerrupters.

Pulse Generator Sensor
Toner End Sensor
Manual Feed Sensor
Paper End Sensor
Registration Sensor
Paper Exit Sensor
Scanner Home Position Sensor
Toner Overflow Sensor
Paper Lift Sensor

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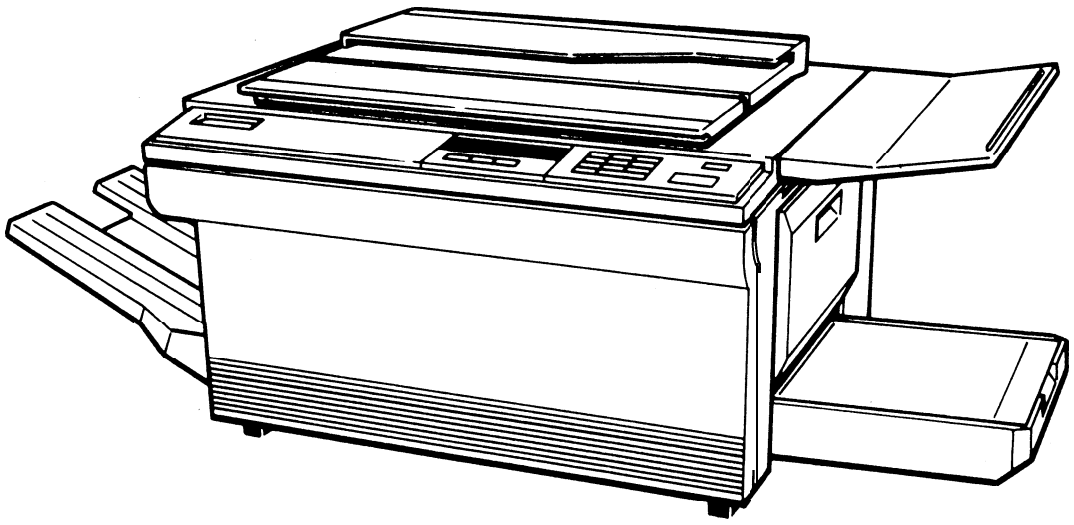
FIELD SERVICE MANUAL



ICOH COMPANY, LTD.

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1. INSTALLATION REQUIREMENTS

1-1 ENVIRONMENT

1. Temperature Range: 10*C to 30°C (50°F to 86°F)

2. Humidity Range: 15% to 90% RH

3. Ambient Illumination: Less than 1,500 lux (Do not expose to direct sunlight.)

4. Ventilation: Room air should turn over at least 3 times/hour.

5. Ambient Dust: Less than 0.15 mg/m^3 (4×10^{-3} oz/yd^3)

6. Room Size: More than 10 m^3 (13.4 yd^3)

7. If the installation place is air-conditioned or heated, place the machine:
   - Where it will not be subjected to sudden temperature changes.
   - Where it will not be directly exposed to cool air from an air conditioner in the summer.
   - Where it will not be directly exposed to reflected heat from a space heater in winter.

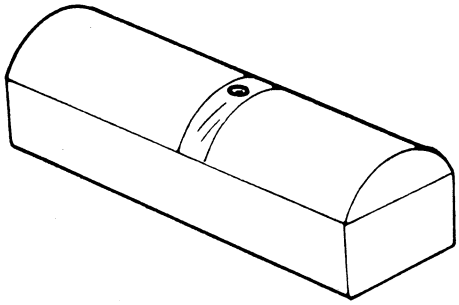
8. Avoid placing the copier in an area filled with corrosive gas.

9. Avoid any areas higher than 2,000 meters (6,500 feet) above sea level.

10. Place the copier on a strong and level base.

11. Avoid any areas where the copier may be subjected to frequent strong vibration.

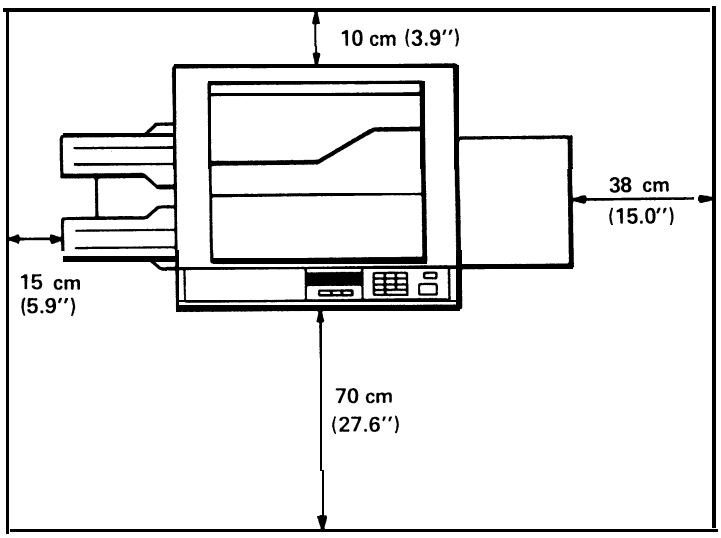
1-2 MACHINE LEVEL



1. Front to back: Within 5 mm (0.2") of level.
2. Right to left: Within 5 mm (0.2") of level.

Set a carpenter's level on the exposure glass to check the machine level.

1-3 MINIMUM SPACE REQUIREMENTS



1. Front :70 cm (27.6").
2. Back :10 cm (3.9").
3. Right :38 cm (31 .5").
4. Left :15 cm (3.9").

1-4 POWER REQUIREMENTS

1. Input voltage level:
   - 110V/60Hz : More than 12A
   - ž115V/60Hz : More than 12A
   - 220V/50Hz : More than 6A
   - 220V/60Hz : More than 6A
   - 240V/50Hz : More than 6A.

2. Permissible voltage fluctuation: 10%.

3. Permissible extension cord: At least 300V, 30A capacity and less than 5 meters **(16.4 ft)** long.

Be sure to ground the machine. (Do not connect the grounding wire to a gas pipe.)

Make sure the plug is firmly inserted in the outlet.

Avoid multi-wiring.

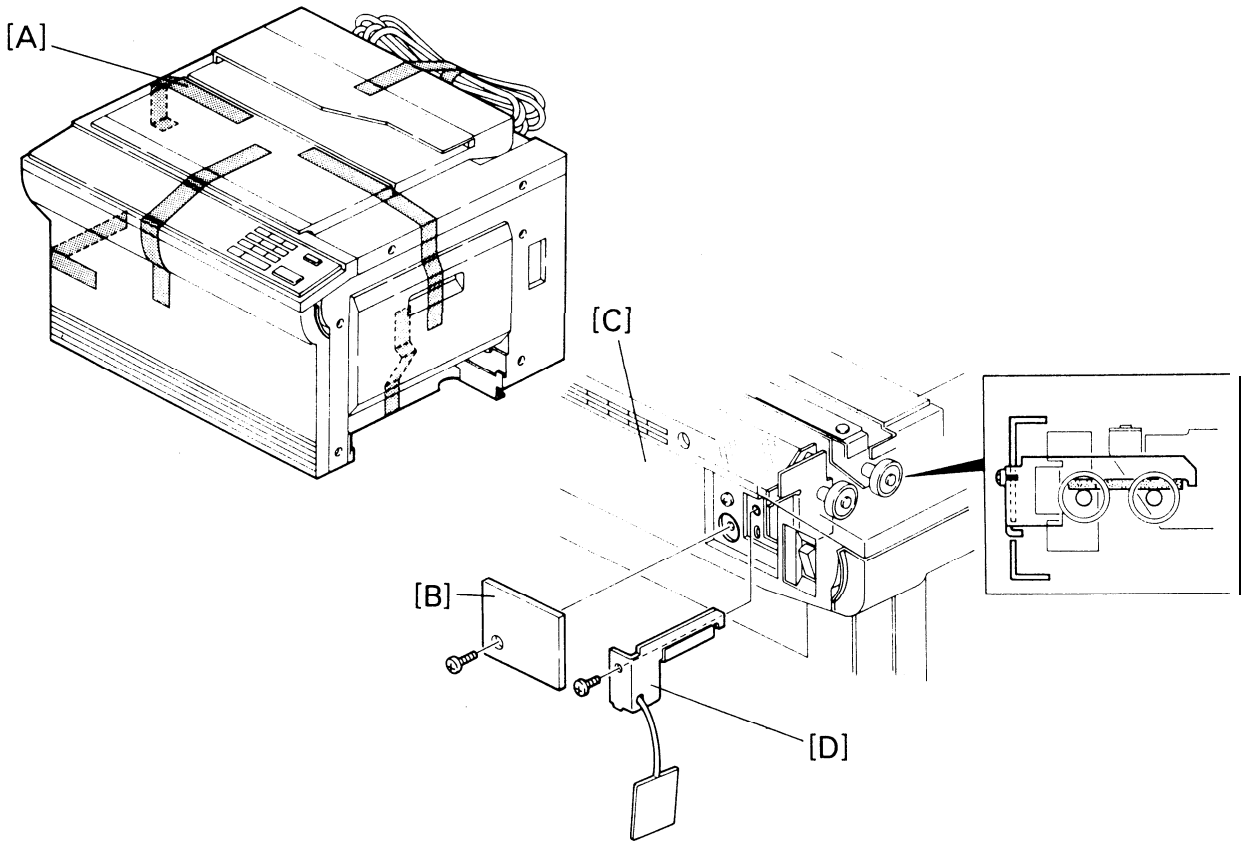
Do not set anything on the power cord.

1-5 **ACCESSORY CHECK**

Check the accessories and their quantities according to the following list:

Cassette	1 pc
Copy Tray	1 pc
Drum	**1** pc
Operating Instructions	1 pc
NECR	**1** pc
Envelope for NECR (1 15V only)	1 pc
Multi-lingual Decal (220/240V only)	1 pc
Paper Size Decal	1 pc.

2. COPIER INSTALLATION

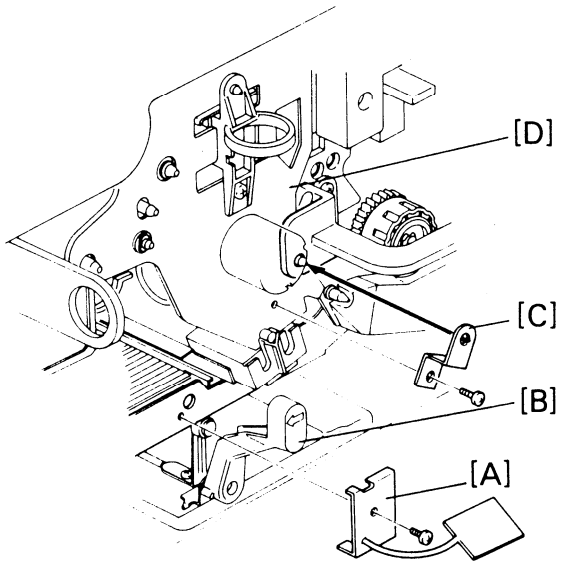


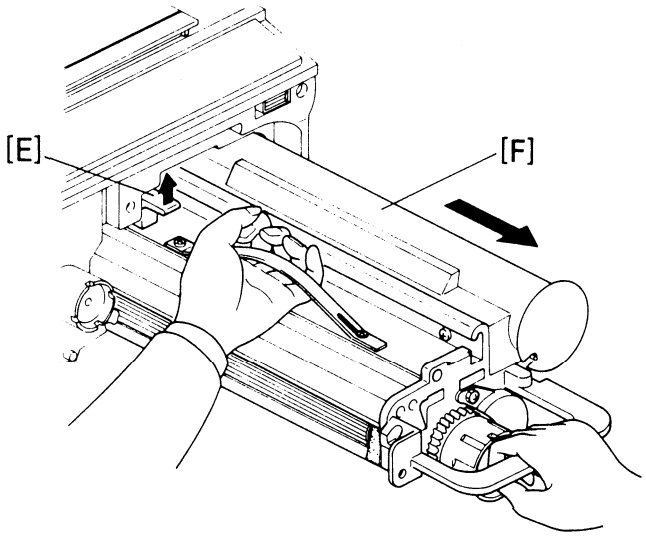
1. Remove the 6 strips of shipping tape [A].

2. Remove the lock plate cover [B] from the left cover [C] (1 screw).

3. Remove the scanner lock plate [D] (1 screw).

4. Re-install the lock plate cover.



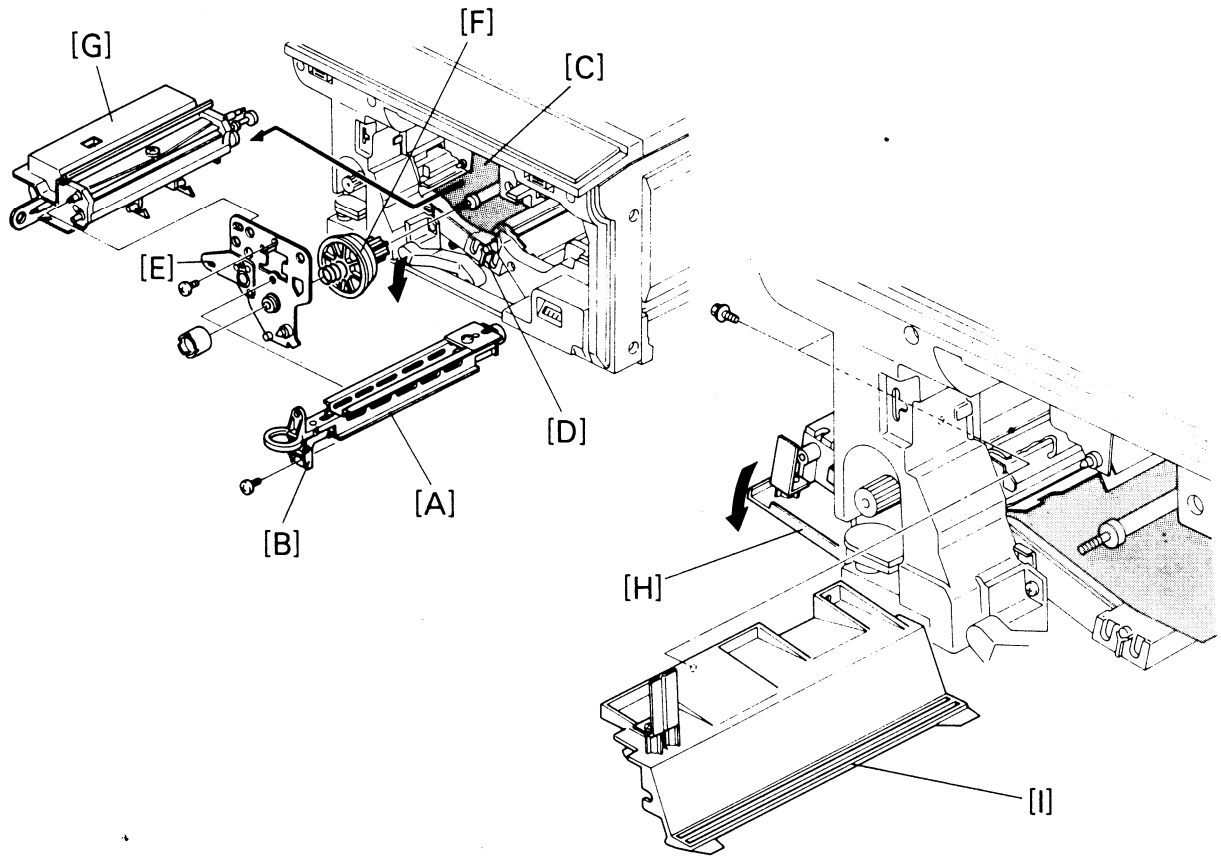


5. Open the front cover and remove the transport lock plate [A] (1 screw).

NOTE: When the transport lock plate is removed, the transport unit may fall and be damaged; to prevent this, gently lower the transport unit using the transport release lever [B].

6. Remove the development retainer plate [C] from the drum stay [D] (1 screw).

7. Raise the development lock lever [E] and pull out the development unit [F].



8. Remove **the charge corona unit [A] together with the wire cleaner [B] (1 screw).**

9. Place a sheet of paper [C] over the T/S **corona unit [D].**

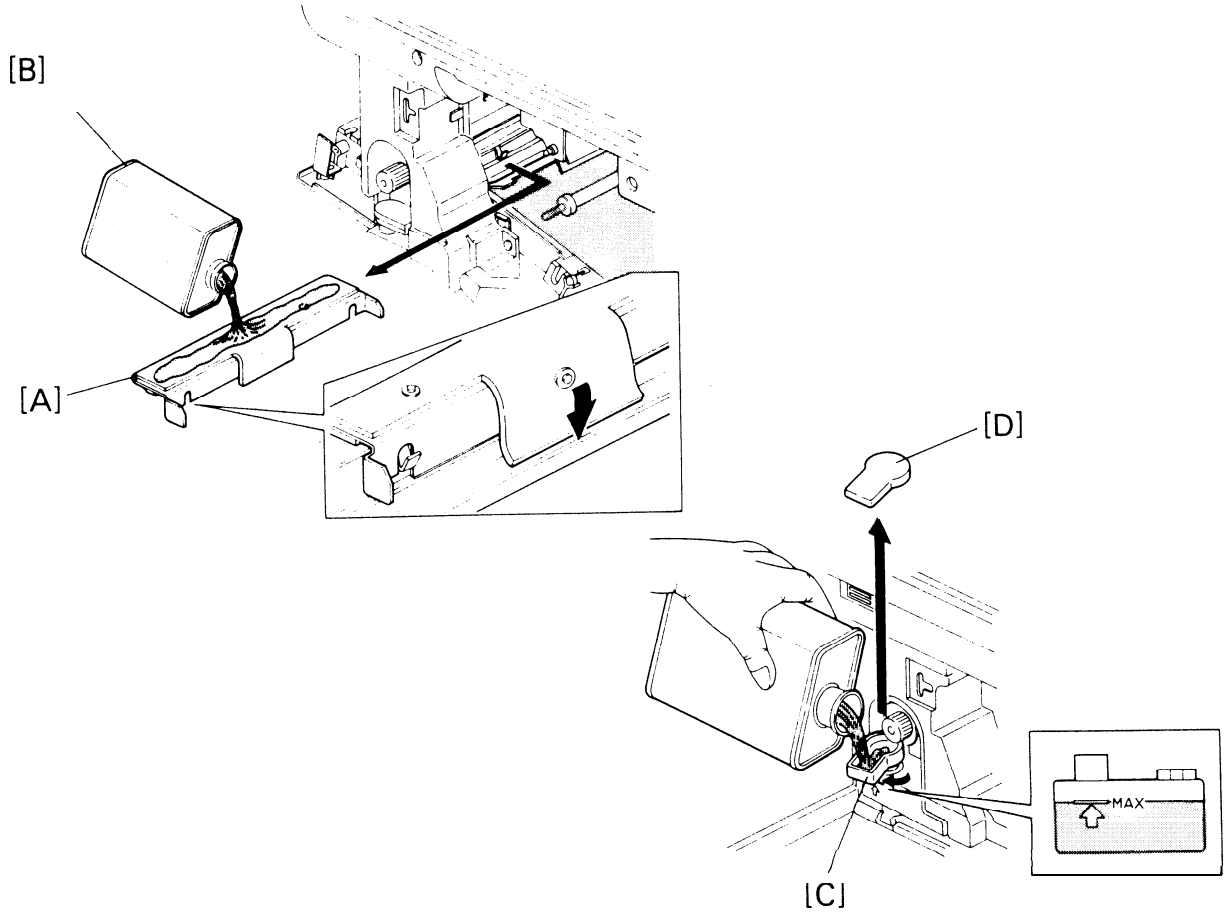
10. Remove **the** drum stay [E] (1 screw and 1 **knob).**

NOTE: The drum stay knob is reverse threaded.

11. **Remove the drum flange [F], and the cleaning unit [G].**

12. Open the exit cover [H].

13. Remove the fusing cover **[1]** from the inside of the copier (2 screws).



14. Remove the oil supply pad [A].

15. Prime the oil supply pad with silicone oil [B].

16. Re-instaH the oil supply pad.

NOTE: Two notches of the oil supply pad must rest on the two hooks, The tail of the oil supply pad must be in the oil sump.

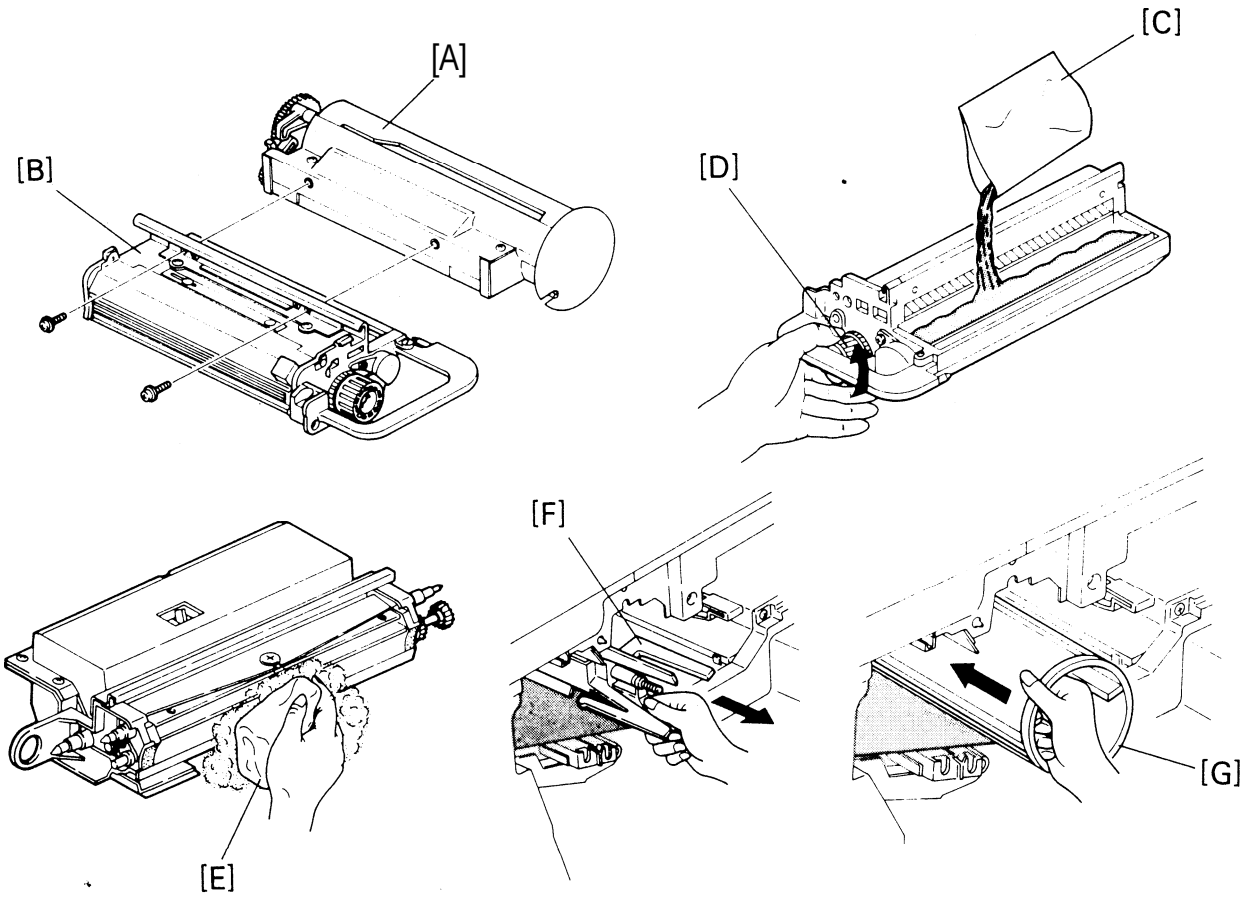
17. Re-install the fusing cover and close the exit cover.

18. Turn the mouth of the silicone oil tank [C] to the front.

19. Remove the silicone oil tank cap [D] and pour silicone oil into the tank.

20. Replace the silicone oil tank cap and turn the mouth to its original position.

NOTE: Clean up any oil that was spilt.



21. Separate the toner tank [A] from the development unit [B] (2 screws).

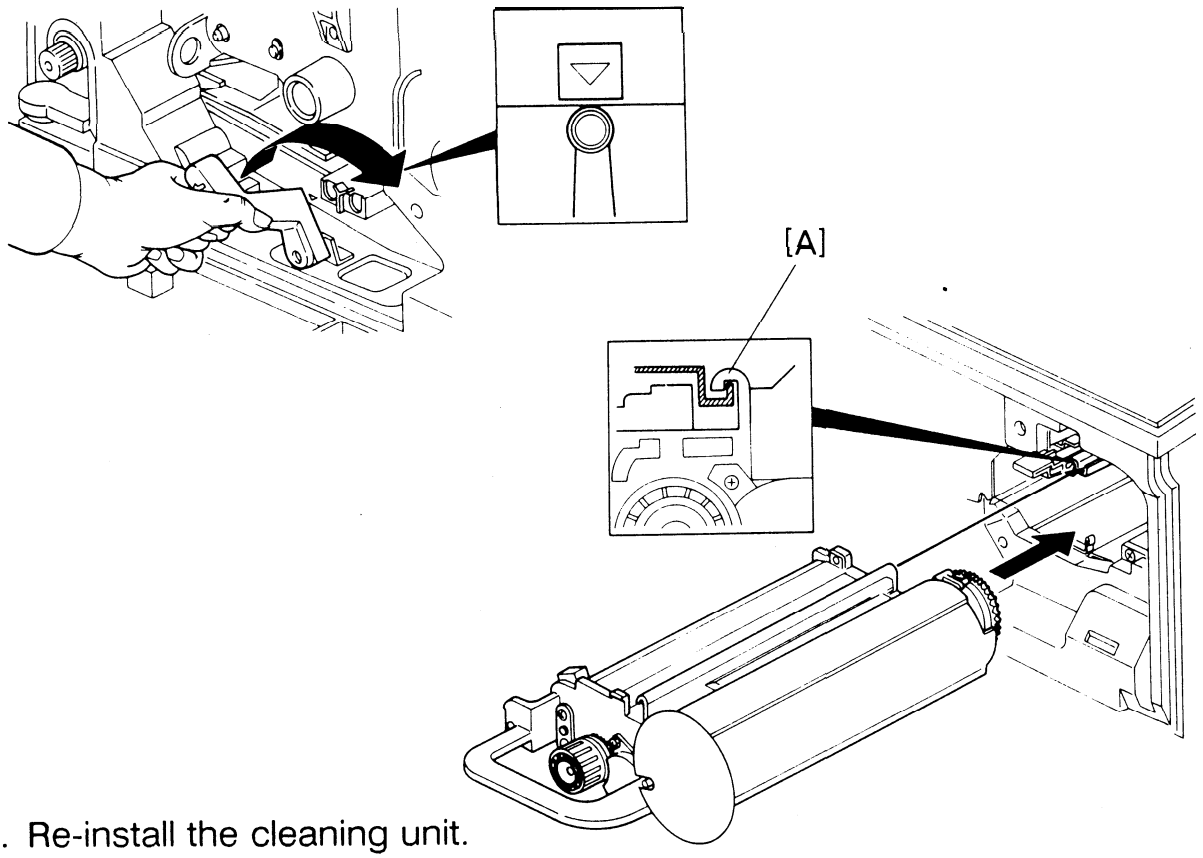
22. Pour one pack of developer (Developer Type 3300) [C] into the development unit while turning the knob [D] counterclockwise to distribute the developer.

23. Remount the toner tank on the development unit.

24. Dust the drum, the cleaning blade, and the cleaning brush with setting powder [E].

25. Pull out the drum guide [F] and insert the drum [G].

26. Push in the drum guide and set the drum flange.



27. Re-install the cleaning unit.

NOTE: When inserting the cleaning unit, keep it away from the drum surface.

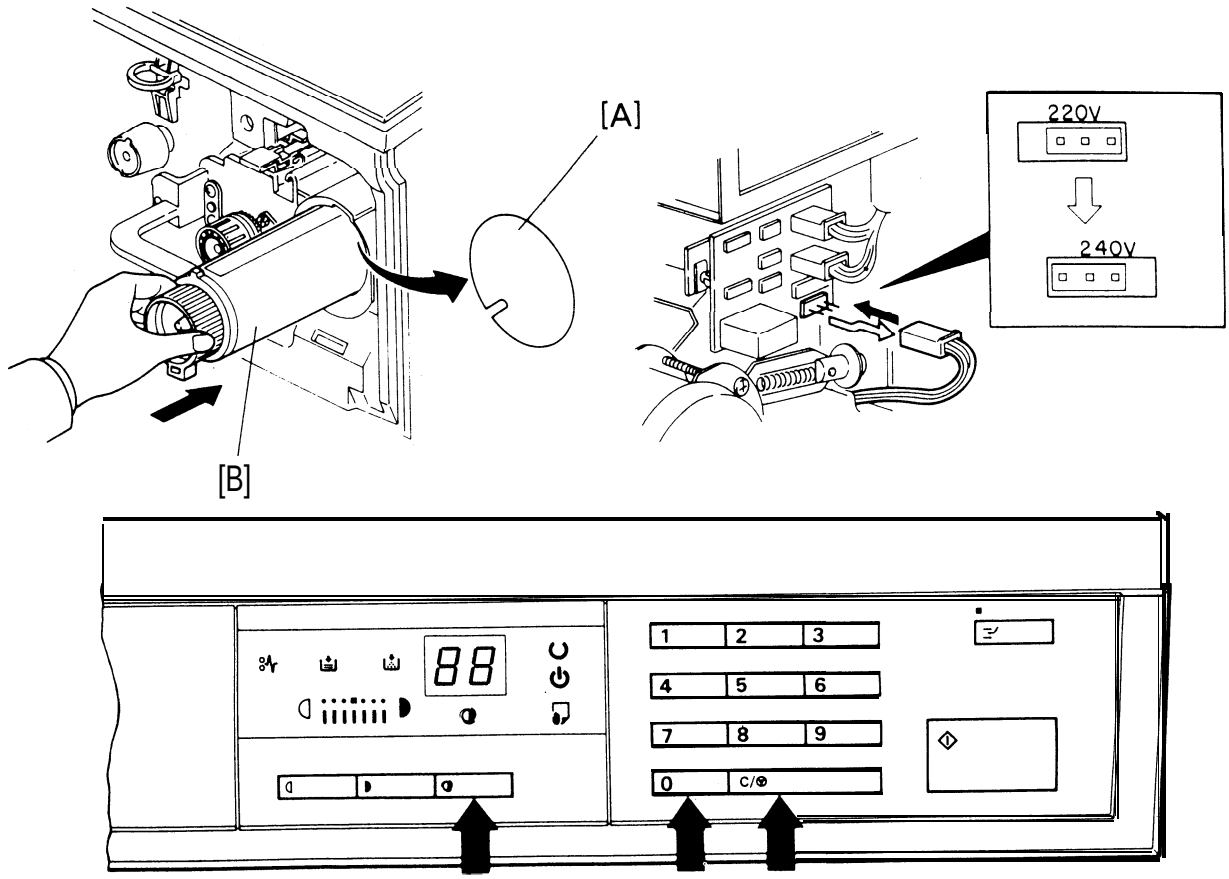
28. Set the drum stay and the charge corona unit complete with the wire cleaner.

29. Remove the paper over the T/S corona unit and return the transport release lever until the roller is positioned under the arrow.

To prevent the drum from being damaged, do not raise the transport unit without setting the drum stay.

30. Re-install the development unit and secure it using the development retainer plate.

NOTE: When installing the development unit, be sure that the development unit rail [A] is properly engaged with the unit guide rail on the copier, but keep it away from the drum surface.



31. Remove the toner hopper seal [A], then install one toner cartridge [B].

NOTE: Refer to the decal on the machine or the Operating Instructions for the toner supply procedure.

32. For 240-volt areas, remove the rear cover (2 screws) and reposition the 220/240 -volt connector on the ac drive board.

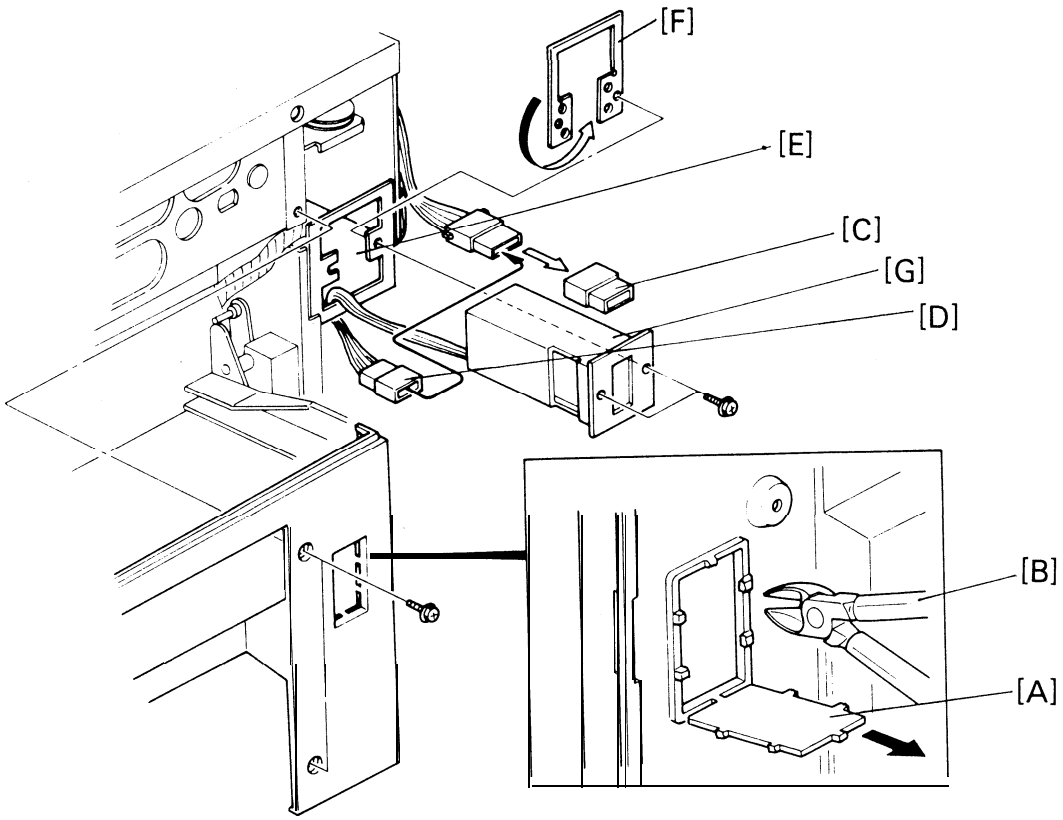
33. Load paper in the cassette, then set the cassette and the copy tray.

34. Plug in the copier and turn on the main switch while pressing the keys: [◑] [0] [C/S] . This causes the toner agitator to rotate, filling the toner hopper with toner.

35. Check the machine operation and the copy quality,

36. Fill out the New Equipment Condition Report.

3. KEY COUNTER HOLDER INSTALLATION



1. Remove the rear and right covers.

2. Cut out the key counter access hole section [A] with nippers [B].

3. Remove the shorting plug [C] from the key counter connector (4p).

4. Connect the connector [D] (4p) of the key counter holder to the key counter harness through the access hole [E].

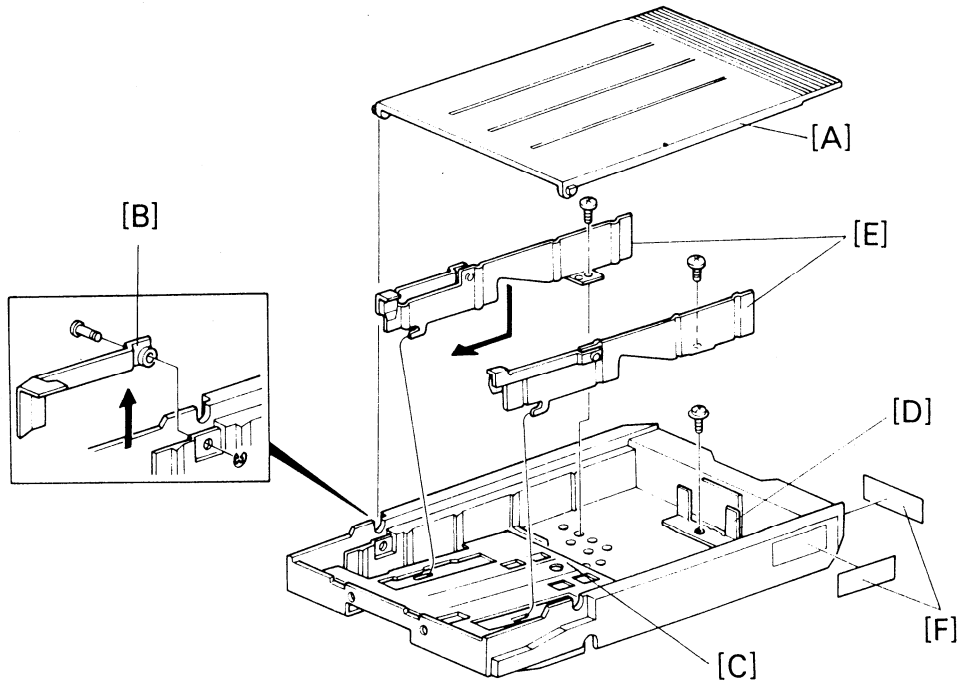
5. Hold the fixing plate [F] on the inside of the key counter bracket and insert the key counter holder [G].

6. Align the holes on the fixing plate with the mounting holes of the key counter holder and secure the holder.

NOTE: The fixing plate has three sets of holes. When installing, make sure to use the correct holes that match the type of counter.

7. Re-install the covers.

4. CASSETTE MODIFICATION



1. Remove the cassette cover [A].

2. Remove the arm pins (1 "E" ring each) and lift out the side fence arms [B].

NOTE: **Keep these parts** for future use.

3. Remove the bottom plate [C].

4. Fit the rear fence [D] (1 screw), side fences [E] (1 screw **each), and re-**install the bottom plate.

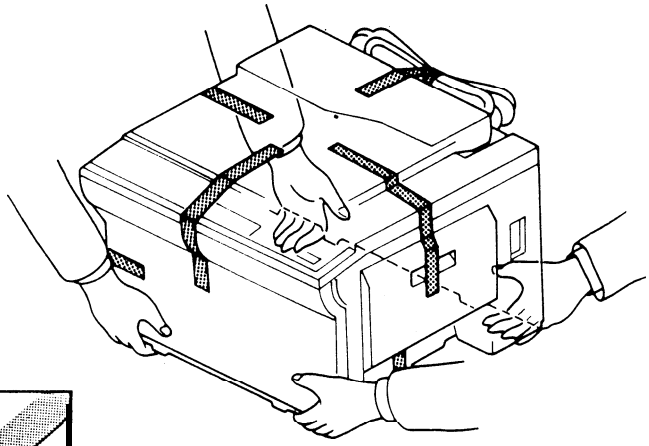
NOTE: The paper size positions are shown on the inside of the cassette.

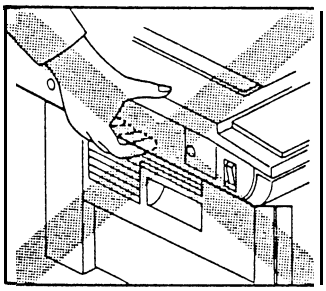
5. Attach the appropriate paper size decals [F] to the cassette as shown.

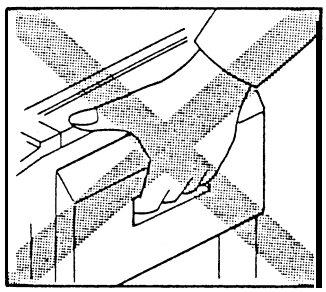
The part numbers for the above parts are as follows:

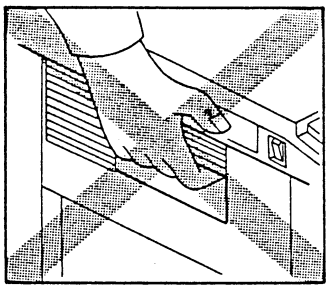
ITEM	PART NUMBER
Rear fence	54472941
Right side fence	A0082727
Left side fence	52152716
Screws (3 pcs.)	09644010W

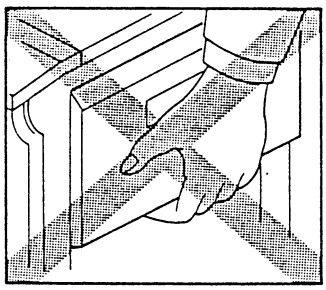
5. TRANSPORTING THE COPIER











Always hold the copier at the correct places (see illustration).

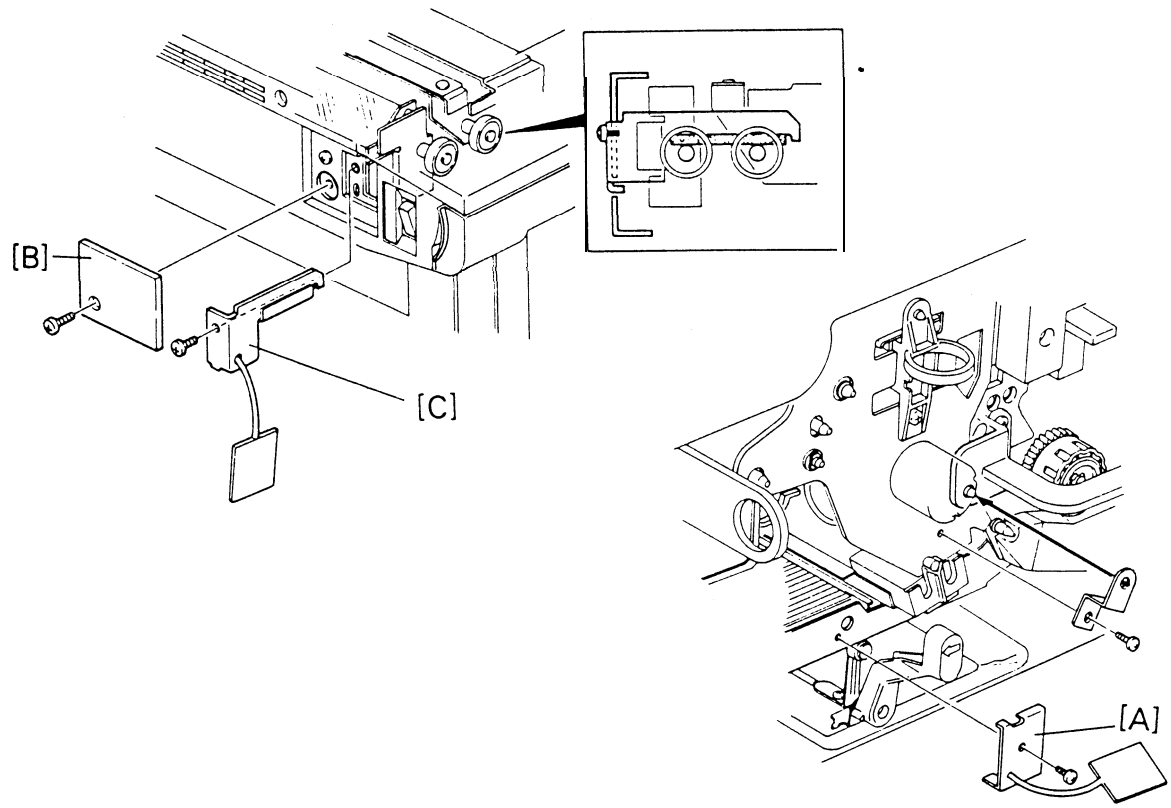
The copier may be seriously damaged **if it is moved without the following preparation:**

5-1 SHORT HAUL TRANSPORTATION

1. Remove the copy tray and the cassette.

2. Secure the following items with tape:
   a) **manual** feed table
   b) platen cover
   c) front cover
   d) exit cover
   e) power supply cord (roll **up first).**

5-2 LONG HAUL TRANSPORTATION BY VEHICLE



1. Remove the developer (see 2-1 Developer Replacement).

2. Install the transport lock plate [A] (1 screw).

3. Temporarily remove the lock plate cover [B] (1 screw) and fit the scanner lock plate [C] (1 screw), and re-install the lock plate cover.

NOTE: The scanner should be in the home position before this procedure is made.

4. Perform procedures 1. and 2. of the Short Haul Transportation

SECTION 2

SERVICE TABLES

SERVICE TABLES

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1. PM TABLE

1: Inspect L: Lubricate R: Replace A: Adjust C: Clean

ITEM	EM	40K	80K	120K	160K	NOTES
OPTICS						
1. Platen cover sheet	C	C	C	C	C	Water (replace if necessary)
2. Exposure glass	C	C	C	C	C	Water or alcohol
3. Lens, mirrors, reflector, toner shield glass	C	C	C	C	C	Silicone cloth or blower brush
4. Original ID sensor	C				C	Blower brush
5. Exposure lamp					I	Replace if necessary
6. Reverse clutch damper					I	Check for damage. Replace if necessary
7 Guide rod and guide plate					C	Alcohol
8. Guide rod felt	L	I	I	I	I	Launa oil
AROUND DRUM						
1. Corona wires	C	C	R	C	R	Blower brush or dry cloth
2. End blocks and casings	c	c	c	c	c	Blower brush or dry cloth
3. Corona paper guide	C	C	C	C	C	Blower brush or cloth (alcohol)
4. Transfer entrance mylar	c	c	c	c	c	Blower brush or cloth (alcohol)
5. Quenching Lamp	c	c	c	c	c	Blower brush or dry cloth
6. Pre-Transfer Lamp	C	C	C	C	C	Blower brush or dry cloth
7. ID sensor, Drum thermistor	c	c	c	c	c	Blower brush

I: Inspect L: Lubricate R: Replace A: Adjust C: Clean

ITEM	EM	40K	80K	120K	160K	NOTES
PAPER FEED						
1. Pickup roller	C	I	I	I	I	Cloth (water), replace if necessary
2. Registration rollers			C		C	Cloth (water)
3. Cassette Bottom Plate Pad			C		c	Cloth (water)
4. Paper feed guide plates, transport guide plates, and other guide plates		C	C	C	C	Cloth (water)
5. Transport belt		C	C	C	C	Cloth (water)
6. Feed and reverse rollers	c		R		R	
7. Pick-off pawls	C					Replace if necessary
8. Torque limiter			L		L	Mobil Temp 78, clean before lubricate
9. Exit rollers	C		C		C	Alcohol or water
10. Paper feed clutch			L		L	Mobil Temp 78, clean before lubricate
'FUSING UNIT						
1. Hot roller					R	
2. Pressure roller				R		
3. Fusing thermister/ thermoswitch			C		C	
4. Hot roller strippers	C				R	Dry cloth
5. Oil supply pad			R		R	
6. Fusing entrance and exit guides	I		C		C	
7. Silicone oil tank	I	I	I	I	I	Refill if less than half full

I: Inspect L: Lubricate R: Replace A: Adjust C: Clean

ITEM	EM	40K	80K	120K	160K	NOTES
8. Oil Blade			R		R	
DEVELOPMENT						
1. Developer			R		R	If necessary
2. Toner scattering prevention seal	C	I	I	I	I	Clean off paper dust and other dirt
3. Side seals		I	I	I	I	
4. Development unit guide		C	C	C	C	Clean with soft cloth when replacing developer
CLEANING						
1. Cleaning blade		R	R	R	R	Dust with setting powder
2. Cleaning brush		I	R	I	R	When replacing, clean inside the unit and dust the brush with setting powder
3. Cleaning seal	I	I	I	I	I	Replace if dirty
4. Cleaning unit		C	C	C	C	
5. Used toner tank	I	I	I	I	I	Replace if toner over" flow is detected
OTHERS						
1. Exit sensor			I		I	Check the feeler action
2. Rear cover filter			I		I	Clean or replace if necessary
3. Drive belt			I		I	
4. Bearings			I		I	
5. Drive gears			I		I	
6. Antistatic brush	C	I	I	I	I	Adjust if deformed

2. GENERAL SERVICE TABLES

2-1 Test Points

Number	Function
TPI02	Original ID sensor voltage
TPI03	GND
TPI04	image density sensor voltage

2-2 Variable Resistors

Number	Function
VR101	Adjusts the original ID sensor voltage
VR102	Adjusts the image density sensor voltage

2-3 **DIP Switches**

DPS101

DIP Switch	Normal	Function
101-1		Lead edge registration adjustment 1
101-2		Lead edge registration adjustment 2
101-3		Lead edge registration adjustment 3
101-4		Lead edge registration adjustment 4
101-5	OFF	Test Mode
101-6	OFF	Free Run. (When in Free Run Mode, the paper feed solenoid, total counter, and paper lift clutch do not work.)

NOTE: The lead edge registration adjustment interval is 1.2 mm per step, See the following table:

NO.	LEADING							EDGE				REGISTRATION				
1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

\- ← 1.2mm/step adjustment → +

DPSI02

DIP Switch	Normal	Function
102-1	ON	Selects ID sensor pattern bias level. (See the following table.)
102-2	OFF	Selects ID sensor pattern bias level. (See the following table.)
102-3	OFF	Selects the fusing temperature level. (OFF = 185°C, ON = 175°C)
102-4	OFF	Warm-up idle. If ON the machine idles for 8 minutes after warm-up. (During warm-up idle, the cleaning solenoid is energized and the development bias is fixed at 250 volts.)

ID Sensor Bias

DPSI02-I	DPS102-2	ID Bias
OFF	**OFF**	**420 V**
ON	**OFF**	470 V
OFF	**ON**	**520 V**
ON	**ON**	**550 V**

3 TEST MODE

3-1 **Output Mode:**

This mode is used to make various adjustments and to check the operations of electrical devices. Press the Start key to emergize the mode, and press the C/S key to de-emergize.

Entered No. (Number keys)	Operation
1	Cleaning solenoid on
2	Fusing lamp on #1
3	ID sensor LED on
4	Transfer corona on
5	Separation corona on
6	Exposure lamp on #2
7	Forward clutch on
8	Reverse clutch on #3
9	Paper lift clutch on
10	Paper feed solenoid on
11	Registration clutch on
14	Toner supply clutch on
15	Vacuum fan on
16	Exhaust blower on
17	Main motor on with the pulse counting
18	Main corona on
20	Bias Exp. 1 (100 V) on #4
21	Bias Exp. 2 (150 V) on #4
22	Bias Exp. 3 (200 V) on #4
23	Bias Exp. 4 (250 V) on #4
24	Bias Exp. 5 (300 V) on #4
25	Bias Exp. 6 (350 V) on #4
26	Bias Exp. 7 (500 V) on #4
27	Bias ID sensor low (470 V) on
28	Bias ID sensor high (520 V) on
29	Bias max. setting (620 V) on
70	Main motor on without the pulse counting
88	All indicators on #5
99	When DPS 101-6 (Free Run) is also on, to change from "Test Mode" to "Free Run Mode". #6

NOTE: #1 During this operation, if the " ◑ " key is pressed, the fusing thermistor data (Hex code) is displayed in the operation panel.

Temperature	Datum
150°C	5A
160°C	70
185°C	9A
230°C	bA

During this operation, the CPU does not detect the service call conditions'. Be careful not to leave the lamp on for a long time.

#2 When the exposure lamp is turned on, after 20 seconds, auto-shut off occurs.
During this operation, if the " ◑ " key and the " ◁ " are pressed, **the** original ID sensor data (Hex code) is displayed in the operation panel (see 9-2 Original ID Sensor Adjustment).

#3 If the scanner is in the position (H. P.) during this operation, the clutch only turns on for a short time.

#4 When the bias amounts are measured, they may be 2-6% lower than the stated amounts.

#5 After 20 seconds, auto-shut off occurs.

#6 If both the "Free Run" and "Test Mode" are turned on ("Test Mode" has priority over "Free Run"), using this procedure will change the copier to "Free Run".

3-2 **Input mode:**

This mode is used when checking the ON / OFF operation of sensors and switches. The data is displayed in the operation panel. Press the Start key to emergize the mode, and press the C/S key to de-emergize.

Entered No. (Number keys)	Data 1 (Tens)	Data 2 (Units)	Function
30	0	1	Paper end sensor
	0	2	Manual feed sensor
	0	4	Paper exit sensor
	0	8	Development set switch
	1	0	Development set switch
40	0	1	Toner end sensor
	0	2	Oil end sensor
	0	4	Toner overflow sensor
	0	8	DPS 101-5 (Test Mode)
	1	0	Auxiliary
50	0	1	DPS 101-1 Regist. timing 1
	0	2	DPS 101-2 Regist. timing 2
	0	4	DPS 101-3 Regist. timing 3
	0	8	DPS 101-4 Regist. timing 4
	1	0	DPS 101-6 (Free Run)
60	0	8	Key counter set
	2	0	Paper lift sensor
	4	0	Scanner home position sensor
	8	0	Registration sensor

NOTE: a) Data information is displayed under the following conditions:
* For sensors when the phototransistor is receiving light from the LED.
* For switches: when the switch is ON.
* For the key counter: when the key counter is set,

b) When more than two sensors or switches one actuated at the same time, the datum is displayed in Hex code.

Example: Toner overflow sensor (4) + DPS 101-5 (8) = C (12).

4. SERVICEMAN MODE

There are six serviceman modes, which have the following functions:

NAME	KEYS *1	FUNCTION
Toner End Back Up Mode	"C/S", "0" and "3".	This is to confirm if the toner end back up mode functions or not.*2
ID Sensor Pattern Copy Mode	"C/S", "0" and "6".	In this mode, a copy of the ID pattern can be made.
Instant Ready Mode	**"DPS101-6** ON", "C/S", "O" and **"7".**	The copier can be used without the fusing warming up (factory use).
ID Sensor Reading Mode	"DPS101-6 ON", "C/S", "O" and "8".	In this mode, the Vsg / Vsp readings are made every scan, instead of every 10 scans.
Toner Feed Mode	"C/S", "0" and "9".	Toner is fed into the development unit until the keys are released.
Toner Fill-up Mode	"C/S", "O" and "1".	The main motor continues to turn, energizing the toner supply clutch until the toner hopper is full of toner (max. 10 seconds) *3

NOTE: *1 To enter the "Serviceman Mode" correctly, the above mentioned keys should be pressed whilst turning on the power.

*2 After one copy, the "Toner End" turns on and continues to burn for another five copies, at which time no more copies can be made. (This is duplicating the "Toner End Mode".)

*3 This procedure is made when a machine is being installed, as there is no toner in the hopper. The toner end sensor detects whether or not toner is required, if so, toner is supplied for a max. of 10 seconds,

5. SERVICE REMARKS

General Cautions

Keep hands away from mechanical **drive components when the copier is** warming **up.** This is to avoid possible injury when the **copier starts idling** at the end of warm up. (The warm-up idle cycle occurs when DPS102-4 is ON.)

The copier also idles after warm up to lift the copy paper to the feed position if paper is not in the correct feeding position.

Drum Charge

1. The corona wires should be cleaned at every service call with a dry cloth or by sliding the corona unit in and out. Do not use emery paper or any solvent for wire cleaning.

2. Do not touch the corona wires with your hands.

3. Make sure that the corona wires are correctly positioned between the "V" slots and the cleaner pads,

4. After cleaning the charge corona unit, make sure that there are no threads on the casing which may cause white lines on the copy.

Optics

1. Do not adjust the following parts:

   a) Eccentric cams of the 2nd scanner and the lens bracket
   b) Fourth mirror angle adjusting screw.

2. Launa oil or an equivalent oil should be used to lubricate or clean the following:

   a) Scanner guide rod (Cleaning)
   b) Scanner guide rod pads (Lubrication)
   c) Scanner guide plate (Lubrication/Cleaning).

Do not use any other kind of oil.

3. Clean the exposure glass with water or glass cleaner.

4. Clean the mirrors with alcohol and/or water and a soft cloth only.

5. Do not touch the following parts with your bare hands:

   a) Reflectors
   b) Exposure lamp
   c) Mirrors and lens

6. After adjusting the light intensity, check and adjust the original ID sensor.

Development

1. Be careful not to nick or scratch the development roller sleeve.

2. Place a sheet of paper under the development unit when it is out of the copier.

3. Clean the drive gears after removing used developer.

4. Clean the development unit guide plate before re-installing the unit.

5. When installing the development unit, keep it away from the drum surface.

Toner Supply

1. The image density sensor and the pre-transfer lamp should be cleaned at every EM or PM with a blower brush.

2. Do not touch the ID sensor pattern with bare hands.

3. Image density sensor adjustment is required when:

   a) The image density sensor is replaced.
   b) The main PCB is replaced.
   c) The drum has been replaced and Vsg is out of specification.
   d) There have been toner supply problems and Vsg is out of specification.

Transfer and Separation

1. The corona wires should be cleaned with a dry cloth at every EM or PM.

2. While the drum stay is removed and the drum is installed on the drum guide, do not lift up the transport unit. (The corona casing will knock against the drum and damage it.)

Cleaning

1. When servicing, be careful not to damage the edge of the cleaning blade.

2. Do not touch the cleaning brush with your bare hands.

3. Before pulling out the cleaning unit, place a sheet of paper under it to catch falling toner.

4. **Be** careful not to damage the drum with the pick-off pawls when pulling out or inserting the cleaning **unit.**

5. When a new cleaning blade and a new cleaning brush is installed, dust them **with setting powder before re-installing the unit.**

Fusing

1. **After replacing** the oil blade and oil supply pad, prime them with silicone oil.

2. **Be careful not to damage the** edge of the hot roller strippers or their tension springs.

3. Do **not touch the** fusing lamp with your bare hands.

4. **Be sure that the fusing lamp is not in contact with the inner surface of** the hot roller.

5. **Be sure that** the oil end sensor contacts the bottom of the oil tank.

Handling the Drum

1. Never touch the drum surface with your bare hands.

2. Store the drum in a cool dry place away from heat.

3. When cleaning the drum, always use a pair of gloves. Do not throw away cotton used for cleaning. Bring it back to the service depot for disposal according to local regulations.

4. Always prime the drum with setting powder after cleaning the drum, and when installing a new drum.

5. To protect the drum, always apply setting powder to a new cleaning blade and new cleaning brush before installing them.

6. Before inserting or pulling out the drum, the cleaning unit and the development unit should be removed to avoid drum damage.

7. Send used drums to the distributor according to standard procedure.

Paper Feed

1. Grease the following parts with Mobil Temp. 78 periodically **to avoid** noise and poor operation:

    a) Slip clutch assembly
    b) Paper feed clutch

6. SPECIAL TOOLS AND LUBRICANTS

Part Number	Description	Remarks
AO179505	DG Gauge	2 **pcs/sa**
52149500	Test Chart **OS-A4**	10 sheets/set
52149501	Test Chart **OS-A4**	100 sheets/set
54429101	Setting Powder	
54429106	Drum Shoe	
54479104	Shoe Adapter	
54209504	Digital Thermometer	
54209505	Digital Thermometer Probe	
54209507	Digital Multimeter	Beckman RMS 3030
54209508	Deluxe Test Lead Accessory Kit	Beckman DL **241**
54209550	Silicone Oil	
54479078	Heat Resistant Grease Mobil Temp. 78	
54429103	Launa Oil	

SECTION 3

REPLACEMENT AND ADJUSTMENT

REPLACEMENT AND ADJUSTMENT

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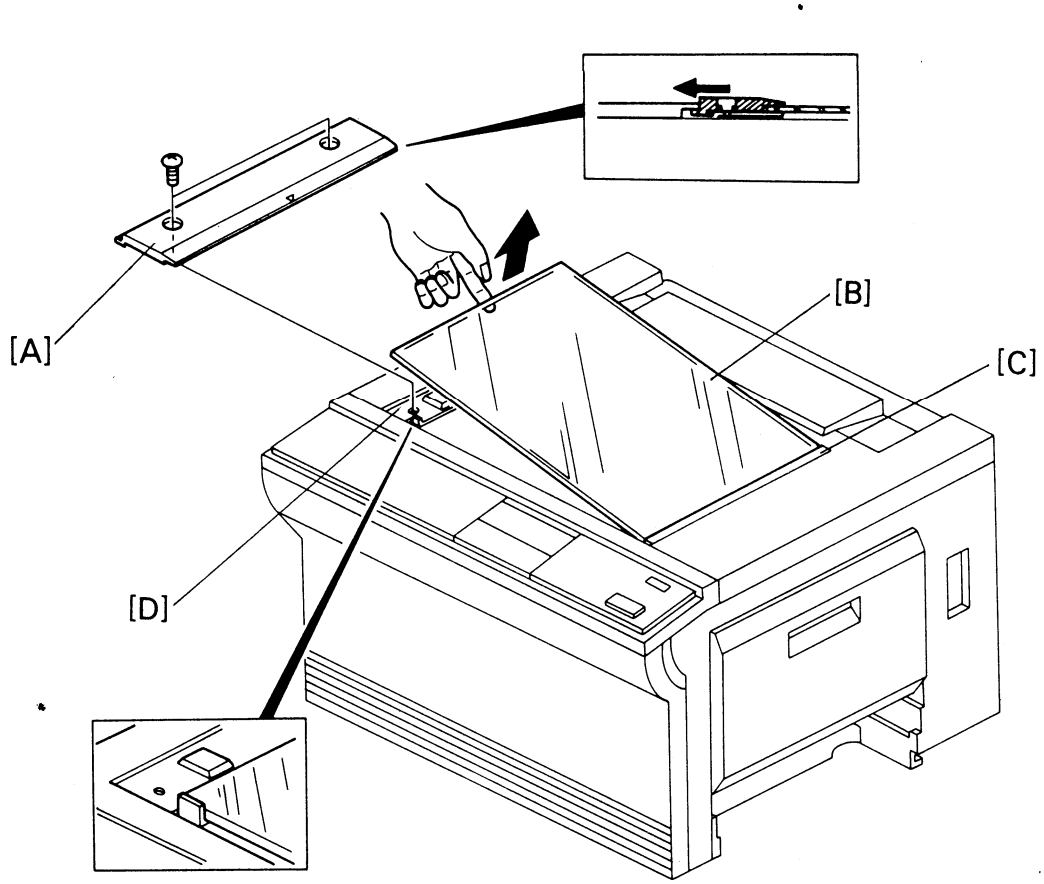
1. OPTICS

1-1 EXPOSURE GLASS REMOVAL



1. Take off the left scale [A] (2 screws).

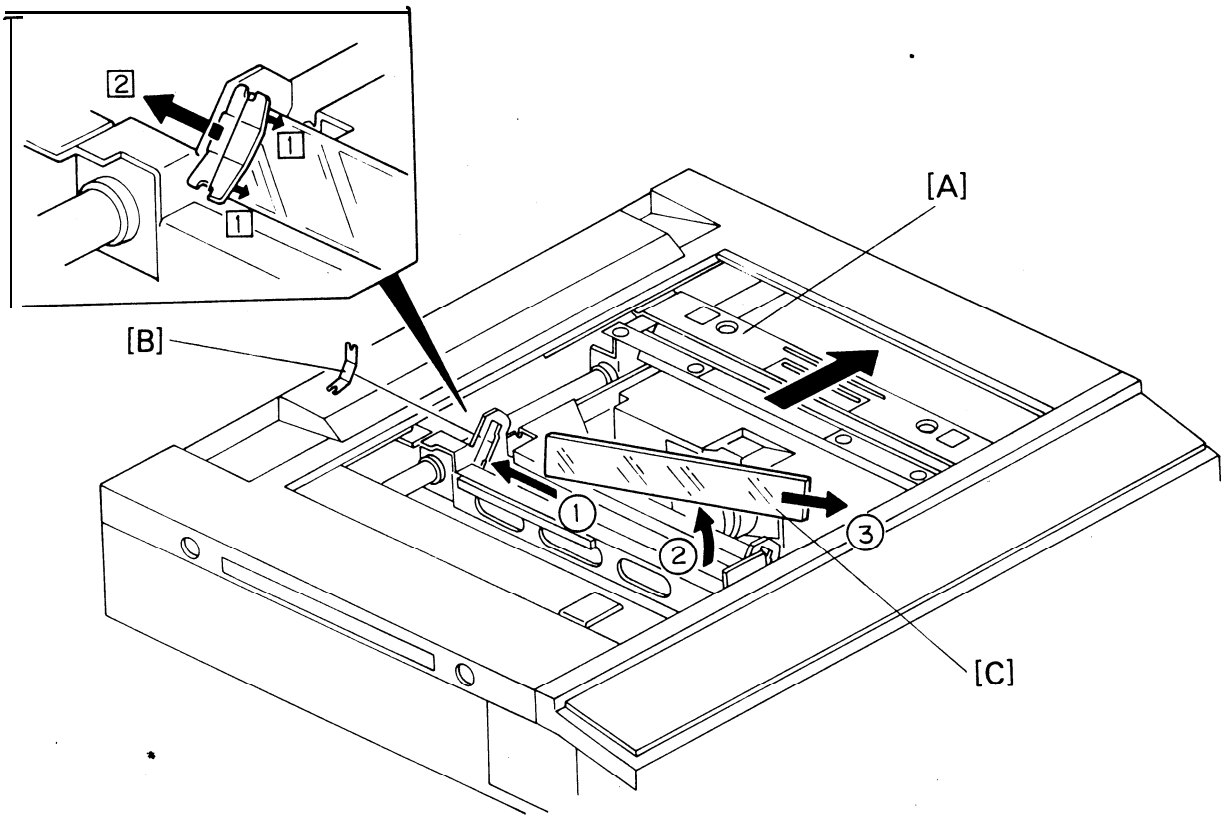
2. Slightly lift **up the left edge and slide out the exposure glass** [B].

NOTE: a) Place the exposure glass on a sheet of paper in order not to scratch the surface.

b) When re-installing the exposure glass, make sure it is under the right glass holder [C], and flush with the tabs on the **ID** sensor pattern plate[D].

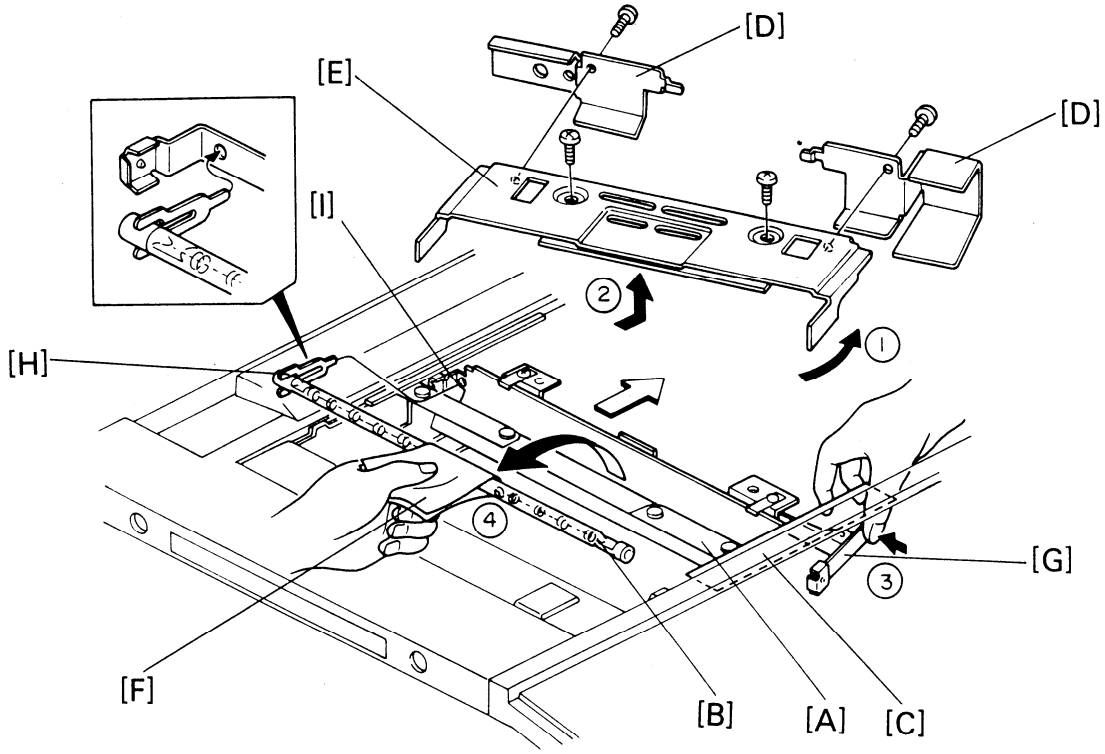
c) When re-installing the left scale, make sure it is as close to the **upper cover as possible (see illustration).**

1-2 SECOND MIRROR REMOVAL



1. Turn off the main switch.
2. Remove the exposure glass (see 1-1 Exposure Glass Removal).
3. Move the 1st scanner [A] 2/3 of the Way to the right, by pushing it at the rear.
4. Remove the rear spring plate [B] by pressing the top and bottom of the plate and moving the plate towards the back of the machine.
5. Carefully move the mirror [C] slightly towards the rear of the machine, in order to release the front side.
6. Remove the front spring plate and lift out the 2nd mirror.
7. Clean the mirrors with a silicone cloth or soft cloth and water, and then dry.

1-3 EXPOSURE LAMP REPLACEMENT



Do not touch the reflector or the new exposure lamp with your bare hands. Use a strip of paper as finger oil. marks will become discolored due to the heat.

1. Turn off the main switch.

2. Remove the exposure glass (see 1-1 Exposure Glass Removal).

3. Move the 1st scanner [A] so that the exposure lamp [B] is located in the central area of the mylar [C].

4. For 115 volt machines, remove the front and rear exposure lamp terminal covers [D] (1 screw each).

5. Remove the reflector cover [E] (2 screws),

6. Wrap a strip of paper [F] around the exposure lamp as shown.

7. Press the release lever [G] of the front lamp terminal and lift out the exposure lamp.

8. Fit the lamp stopper [H] to the rear terminal of the new exposure **lamp,** and install the lamp.

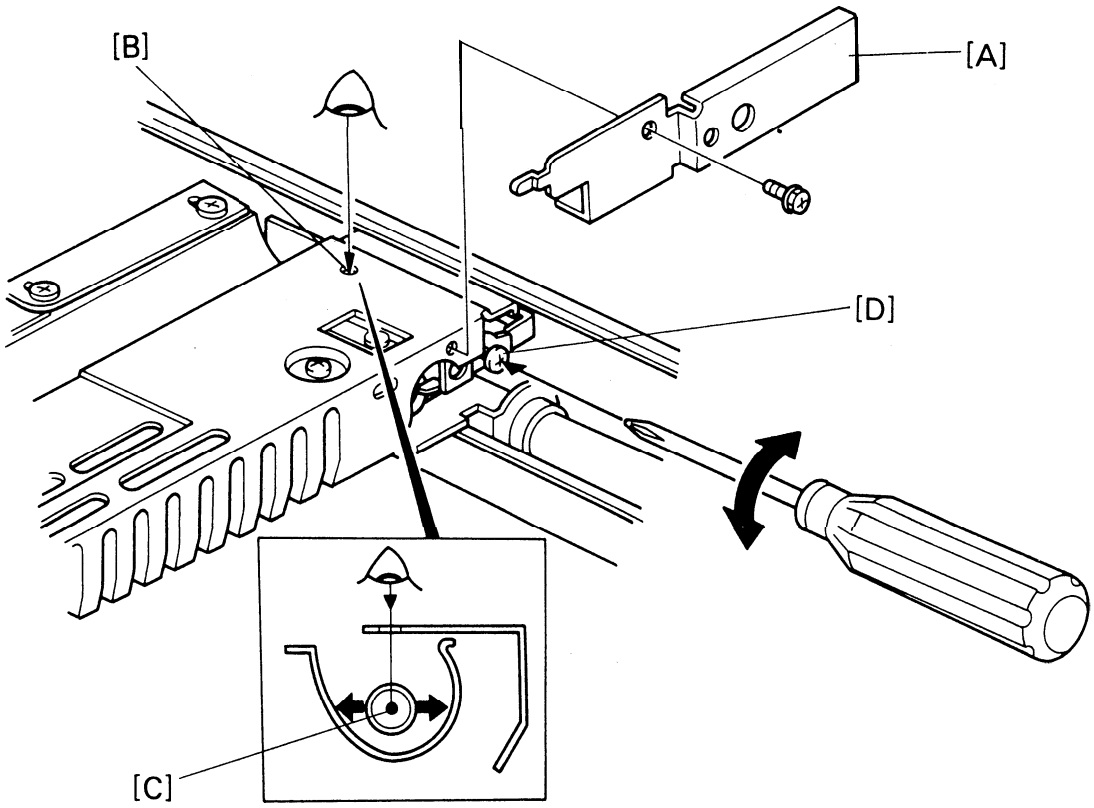
NOTE: Make sure the stopper fits in the terminal hole [1].

9. Reassemble the 1st scanner.

10. Check the exposure lamp position is correct (see 1-4 Exposure Lamp Position Adjustment).

NOTE: A stopper is fixed to the exposure lamp in order to prevent possible lamp rotation.

1-4 EXPOSURE LAMP POSITION ADJUSTMENT



1. Turn off the main switch.

2. Remove the exposure glass (see 1-1 Exposure Glass Removal).

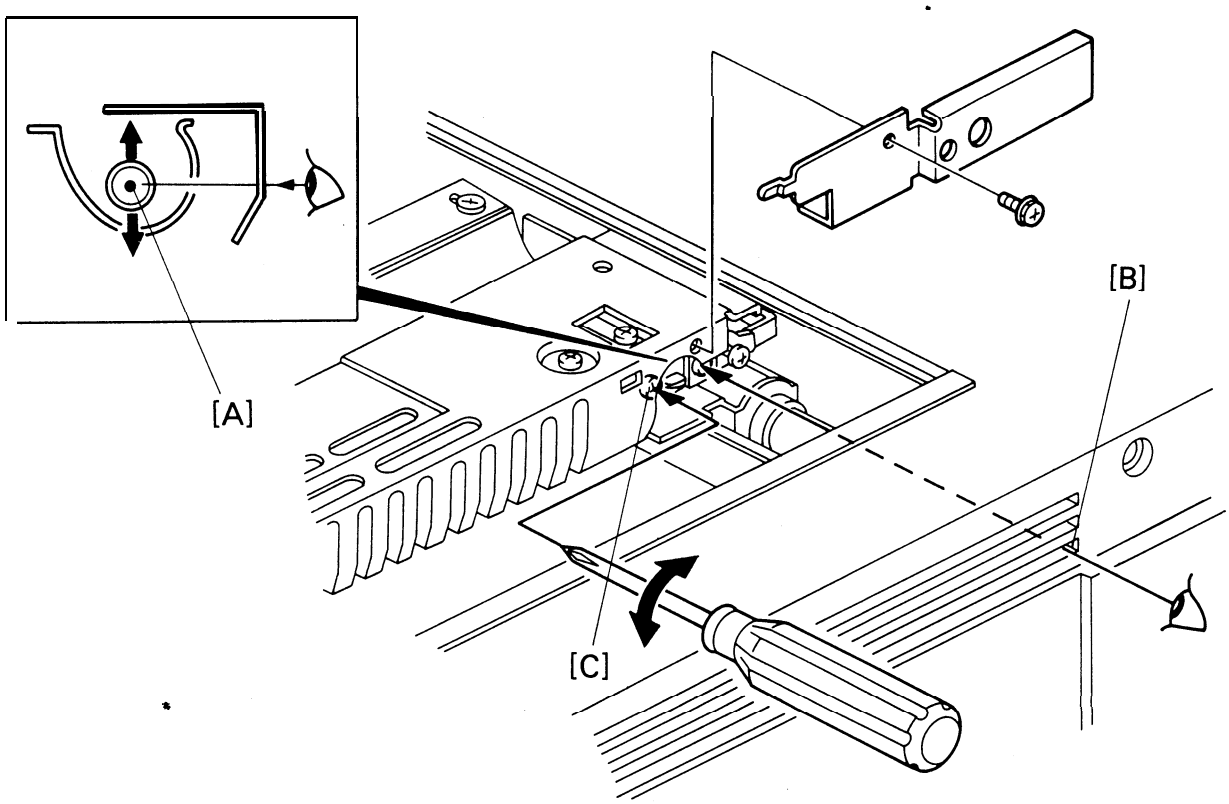
3. Move **the 1st scanner so that the exposure lamp is located** in the central area of the mylar.

4. For 115 volt machines, remove the front and rear exposure lamp terminal covers [A] (1 screw each).

- Horizontal Adjustment -

5. View the exposure lamp filament through the front and rear sight holes [B]. The filament [C] should be directly beneath the sight holes.

6. To correct the position of the filament, turn the front and rear adjusting screws [D].

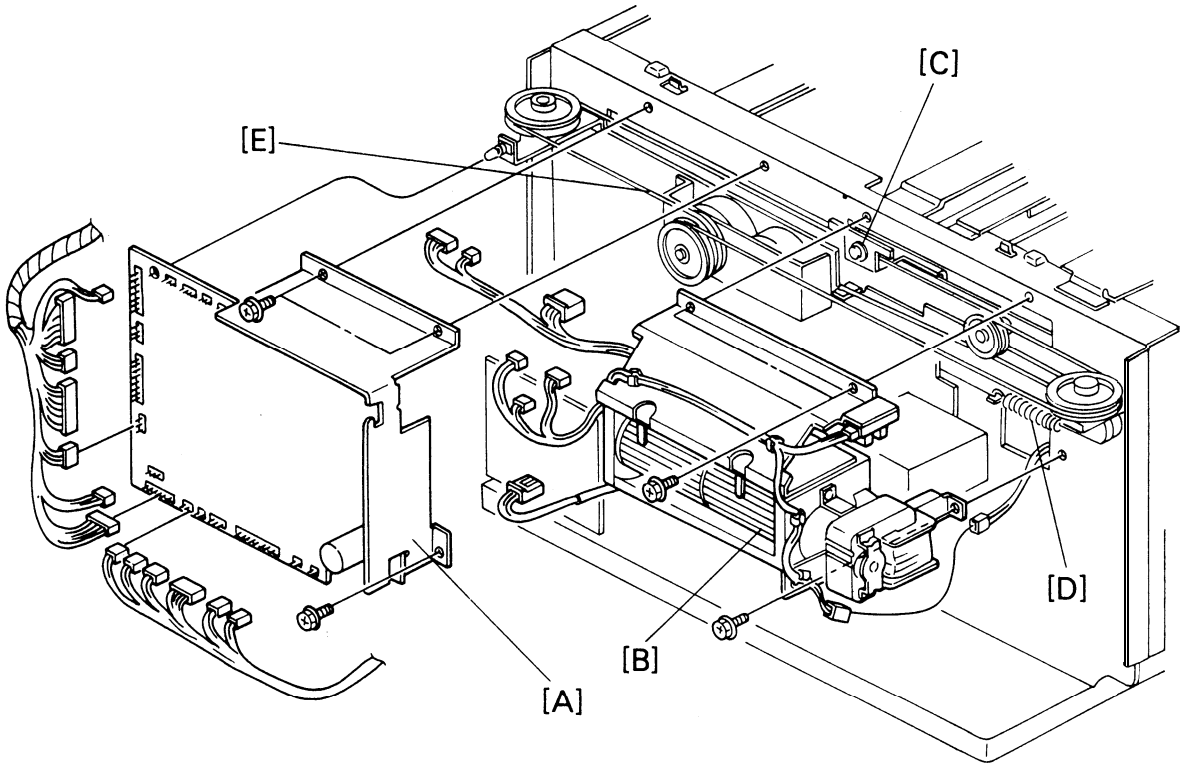


- Vertical Adjustment -

7. View the exposure lamp filament [A] through the right ventilation holes [B] in the upper cover. The filament should be level with the sight holes.

8. To correct the position of the filament, turn the front and rear adjusting knobs [C].

1-5 SCANNER DRIVE WIRE REPLACEMENT



1. Turn off the main switch and unplug the copier.

2. Remove the platen cover, and upper cover (6 screws).

3. Remove the rear cover (2 screws).

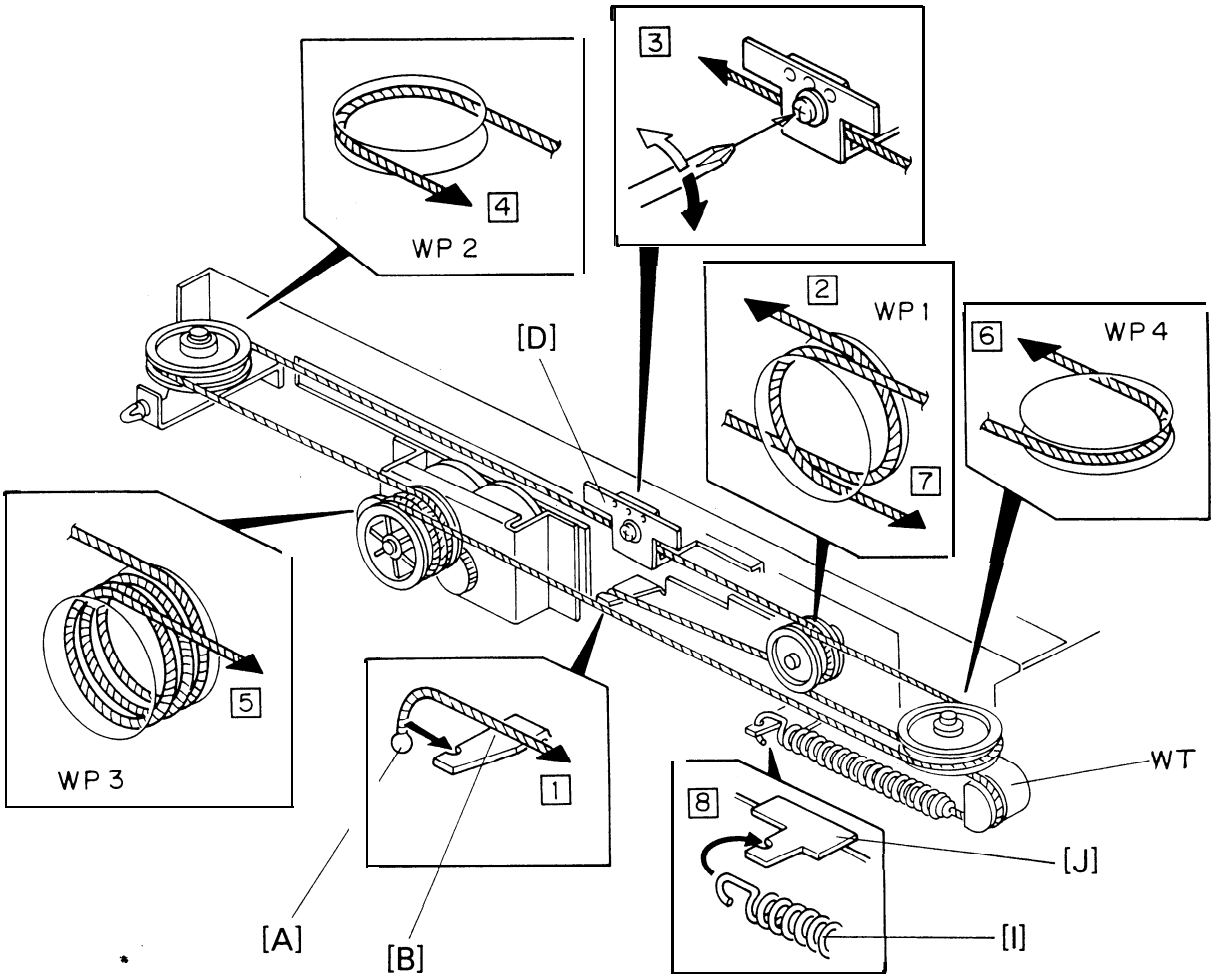
4. Open the front cover and remove the following covers:

a) **lock plate cover (1 screw)**
b) left cover **(4** screws)
c) **right cover** **(4 screws).**

NOTE: Open the exit cover when removing the left cover, and open the manual feed table when removing the right cover.

5. Remove the main PCB [A] **(4 screws, 19 connectors, 1 locking support 3** wire clamps), and the optics cooling fan assembly **[B]** (3 screws, 3 2p connectors, 1 wire clamp).

6. Loosen the wire clamp screw [C], unhook the tension spring [D], and remove the scanner drive wire **[E].**



7. Hook the bead [A] of the new wire in the anchorage point on the rear plate [B], and run it over the pulleys in the following order:

   a) inner track of WP1
   b) via the wire clamp [D] to WP2
   c) inner to outer on WP3 (3 times) to WP4
   d) outer track of WPI to WT.

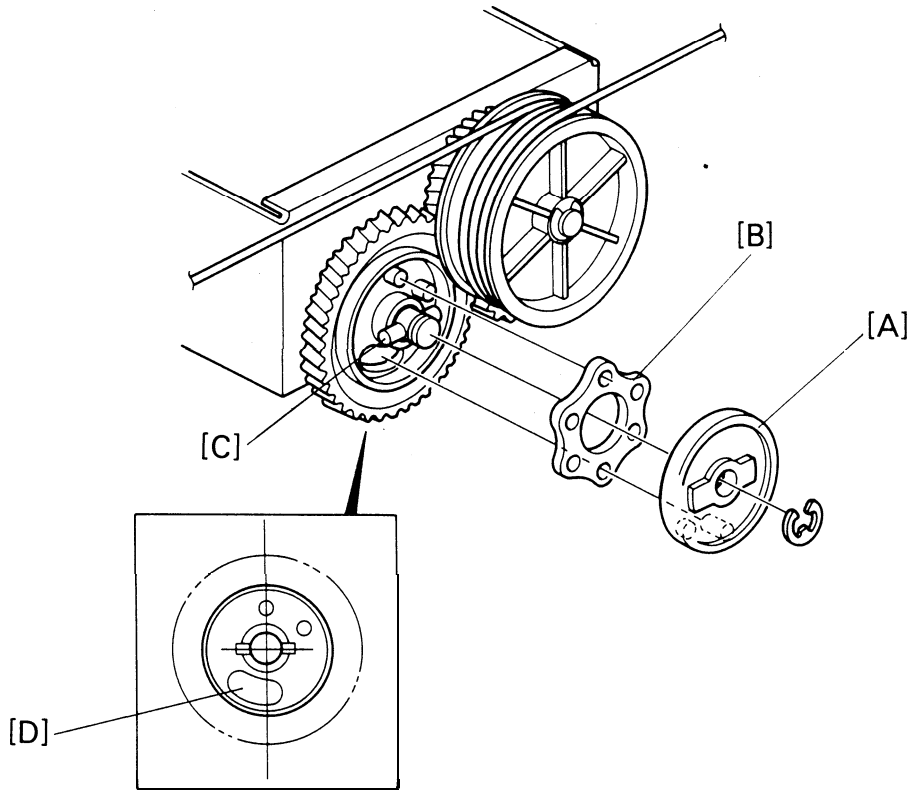
8. Hook the tension spring [1] to its anchorage point [J].

NOTE: Rotate the scanner drive pulley in order to confirm that the scanner drive wire moves smoothly and that it is not over-lapping at any point.

9. Move the 1st and 2nd scanners to their furthermost right position (as viewed from the rear of the copier), and temporarily tighten the wire clamp.

10. Perform the horizontal magnification adjustment (see 9-3 Horizontal Magnification Adjustment).

1-6 REVERSE CLUTCH DAMPER REPLACEMENT



1. Turn' off the main switch, unplug the copier, remove the rear cover (2 screws), upper cover (6 screws) and the right cover (4 screws).

2. Remove the main PCB (4 screws, 19 connectors, 1 locking support, 3 wire clamps).

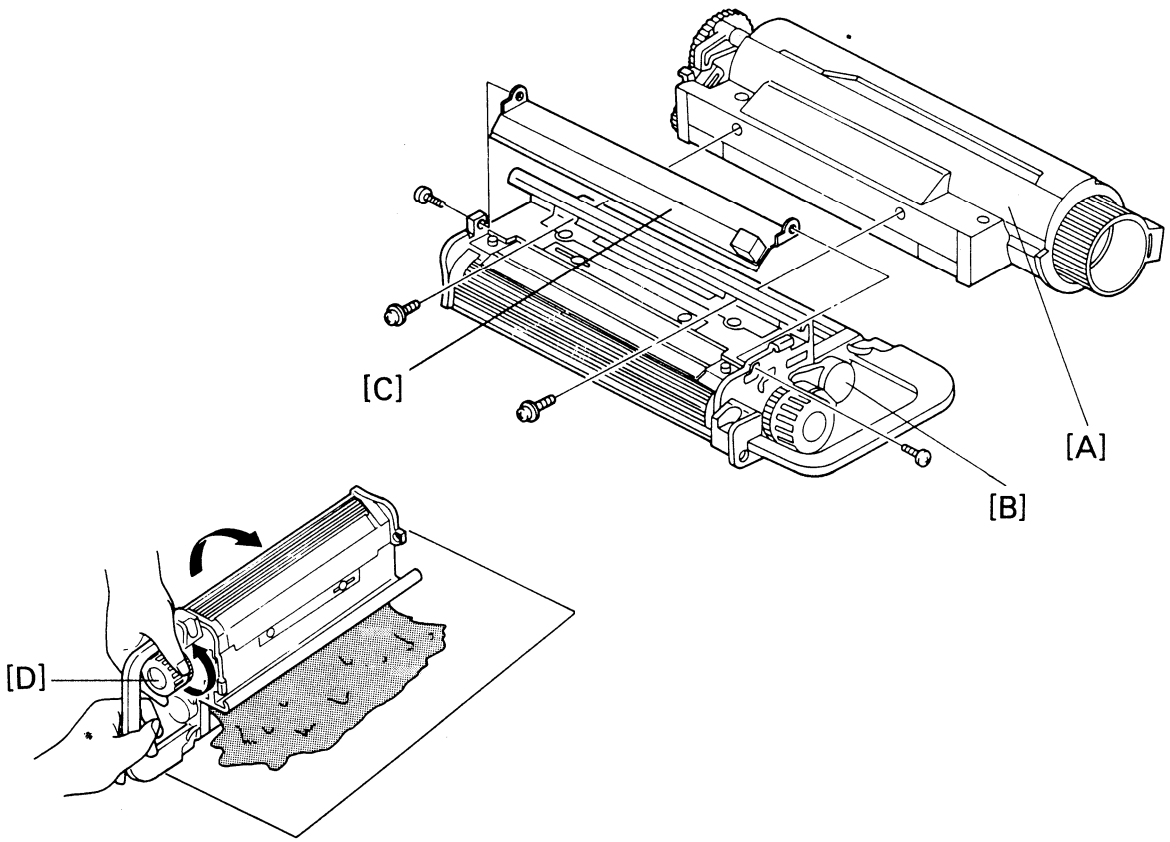
3. Remove the reverse clutch damper cover [A] (1 "E" ring) and replace the damper [B].

NOTE: a) Take care that the pin [C] does not fall out of position during the above procedure.

b) For easier re-installation of the reverse clutch damper cover, position the hole in the reverse drive gear [D] as shown in the illustration, and make sure the pin is horizontal. Then install the damper cover making sure the long stud fits into the hole of the reverse drive gear.

2. DEVELOPMENT

2-1 DEVELOPER REPLACEMENT



Take care not to damage the upper brush seal.
After removing used developer, clean the drive gears.

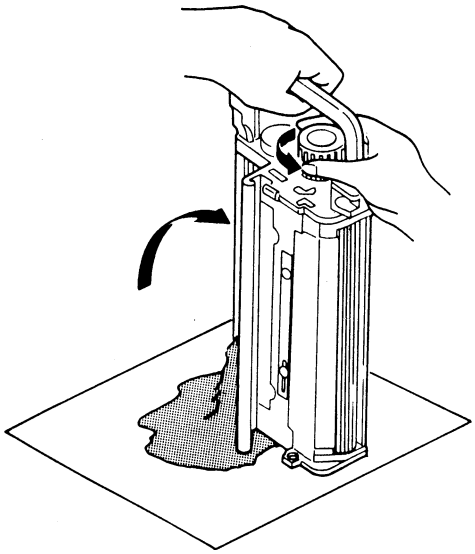
1. Open the front cover, loosen the development retainer plate (1 screw), raise the development lock lever and pull out the development unit.

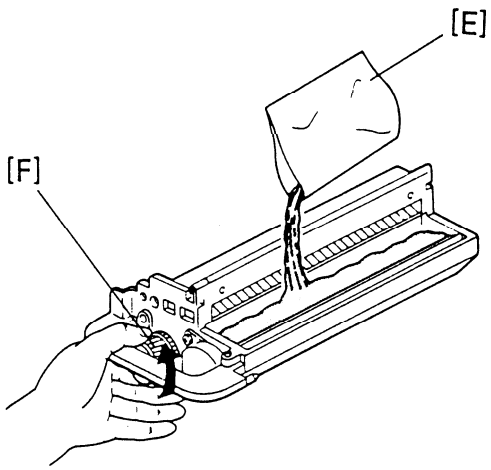
2. Separate the toner tank [A] from the development unit [B] (2 screws).

3. Remove the development brush cover [C] (2 screws) and clean it.

4. Set the development unit on a large sheet of paper with the inlet facing downwards.

5. Empty the development unit by turning the paddle roller knob [D] counterclockwise.





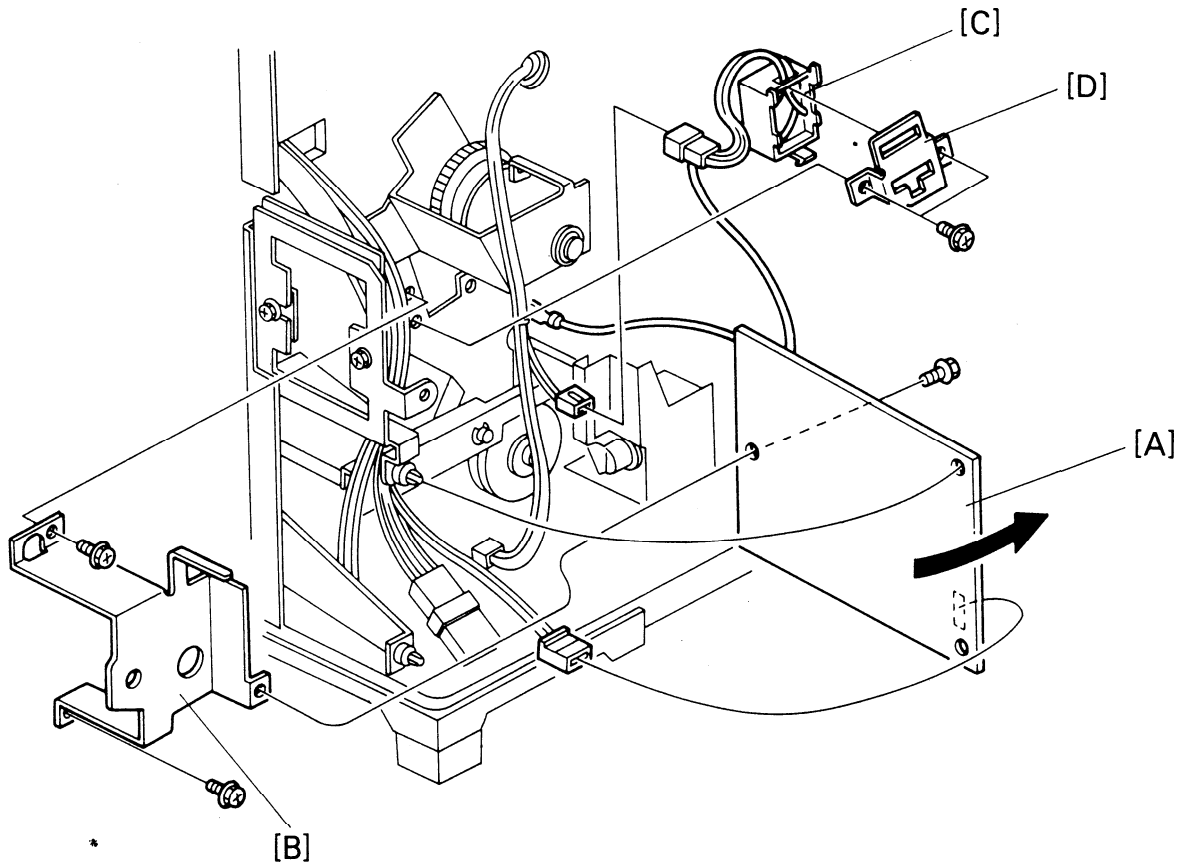
6. To remove the trapped developer at the ends of the development unit, hold up the unit at an angle, and alternatively turn the knob and gently shake the unit.

7. Repeat steps 5. and 6. until all the developer is removed.

8. Place the development unit on a level surface and pour in one pack of FT3300 developer [E] (750 g) while turning the paddle roller knob [F].

9. Put the used developer into a disposal bag, and dispose of it according to local regulations.

2-2 **DEVELOPMENT SET SENSOR REPLACEMENT**



1. Turn off the main switch and unplug the copier.

2. Remove the development unit (see 2-1 Developer Replacement).

3. Remove the main PCB (see 1-6 Reverse Clutch Damper **Replacement), --**

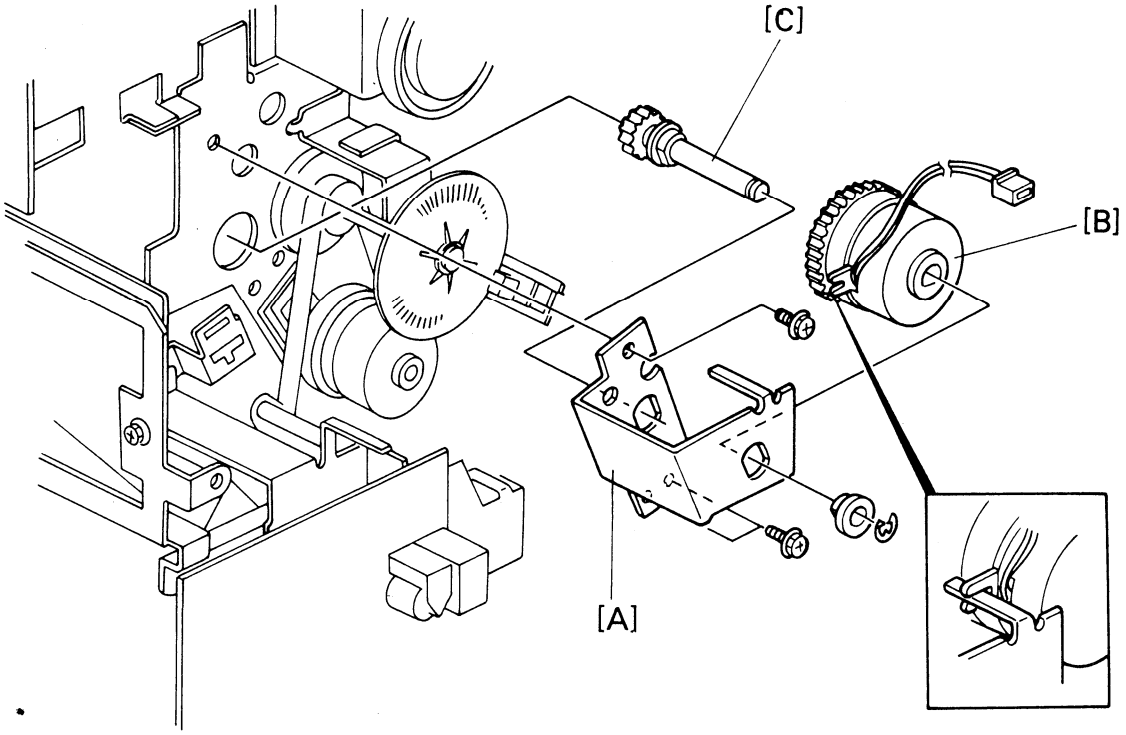
4. Remove the 1 screw, 2 locking supports, and CNI on the CTB **power** pack [A], **and swing it to the** right.

5. Remove the paper feed clutch bracket [B] (2 screws, 1 wire clamp).

6. Remove the development set sensor [C] and bracket **[D]** (2 screws, 1 connector, 1 wire clamp).

7. Separate the sensor from the bracket and replace it.

2-3 **TONER SUPPLY CLUTCH REPLACEMENT**



1. Remove the main PCB (see 1-6 Reverse Clutch Damper Replacement).

2. Remove the toner supply clutch assembly [A] (3 screws), and separate the clutch [B] from the bracket by removing the clutch-shaft [C] (1 "E" ring).

3. Replace the clutch.

NOTE: Make sure the groove of the toner supply clutch is correctly engaged with the bracket.

2-4 **IMAGE DENSITY SENSOR CHECK AND ADJUSTMENT**

NOTE: The ID sensor adjustment is required in the following situations:

a) When the Main PCB is replaced.

b) When the drum has been replaced and Vsg is out at standard.

c) When a problem with toner supply occurs, and checking the ID sensor voltage shows the Vsg is out of standard.

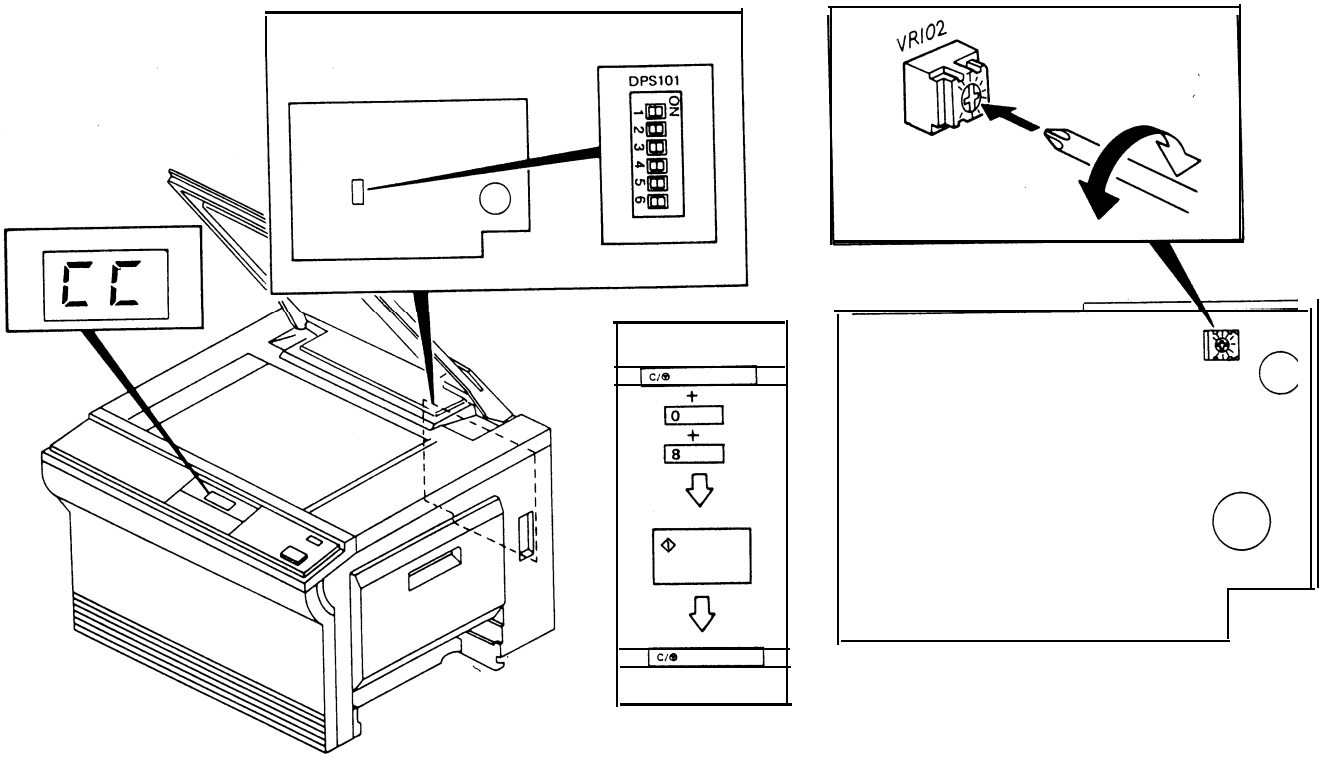
ADJUSTMENT STANDARD: 4.0 ±0.2 (CC ± 10)

METHOD A: Reading from the CPU

1. Clean the following parts:

   a) image density sensor
   b) optics
   c) charge corona wire
   d) quenching lamp.

2. Place 2 or 3 sheets of white paper (A4 or LT) on the exposure glass and lower the platen cover.



3. Turn off the main switch and turn on DPS 101-6 (Free Run) on the main PCB.

4. Turn on the main switch while pressing the “C/S”, “O”, and “8” keys at the same time.

5. When the copier is ready, press the “Start” key in order to show the Vsg voltage in the operation panel.

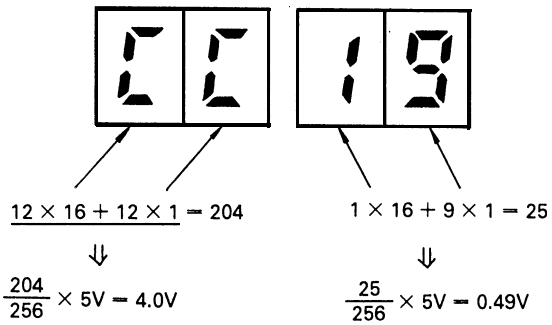
NOTE: a) Vsg and Vsp amounts are shown alternatively each second.
b) The amounts are shown in Hex code.

	CONTROL RANGE		SPECIFICATION
V_{SG}	VOLTAGE	2.5 ~ 5V	4 ± 0.2V
	DISPLAY	80 ~ FF	C2 ~ D7
V_{SP}	VOLTAGE	0 ~ 2.5V	
	DISPLAY	00 ~ 80	

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

[How to Calculate]

• Example



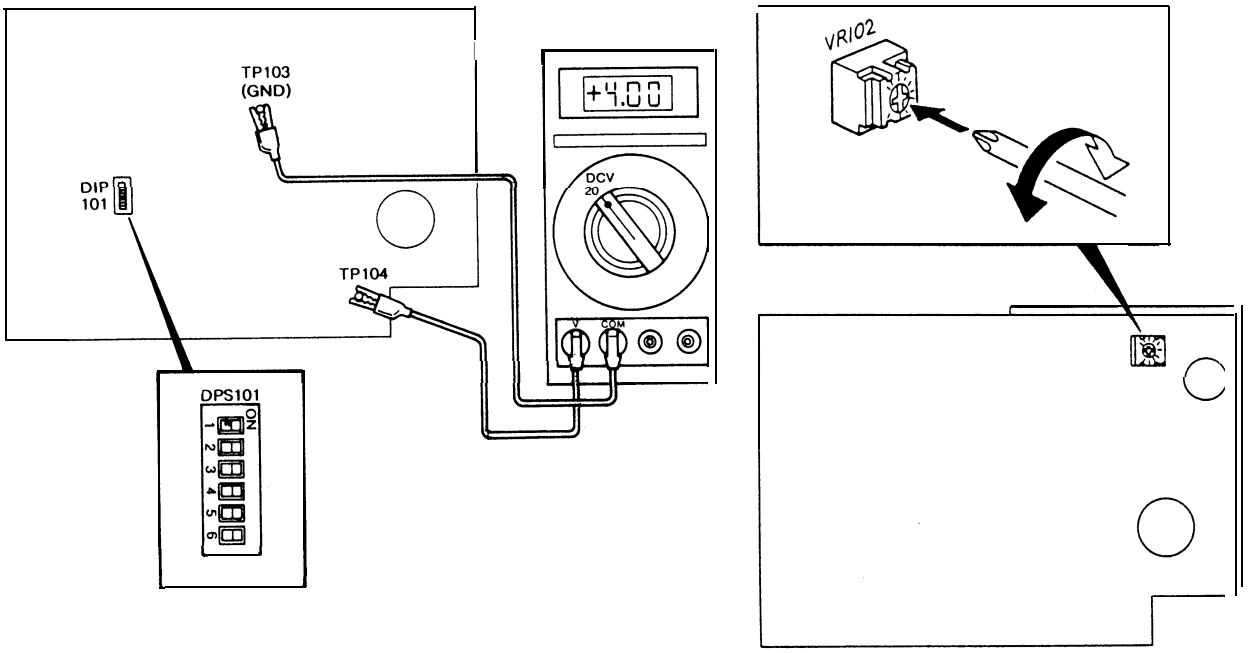
6. If Vsg is incorrect, adjust VR102 on the main PCB in order to obtain CC ±10 (4 ±0.2 volts).

7. Press the "C/S" key to stop the copier, turn off the main switch and turn off DPS 101-6.

METHOD B: Reading from a Digital Multimeter

1. Clean the image density sensor.

2. Turn off the main switch and turn on DPS 101-5 (Test Mode) on the main PCB.



3. Hook up the digital multimeter leads as follows:

   a) positive lead to TP104
   b) negative lead to TP103 (GND).

4. Turn on the main switch.

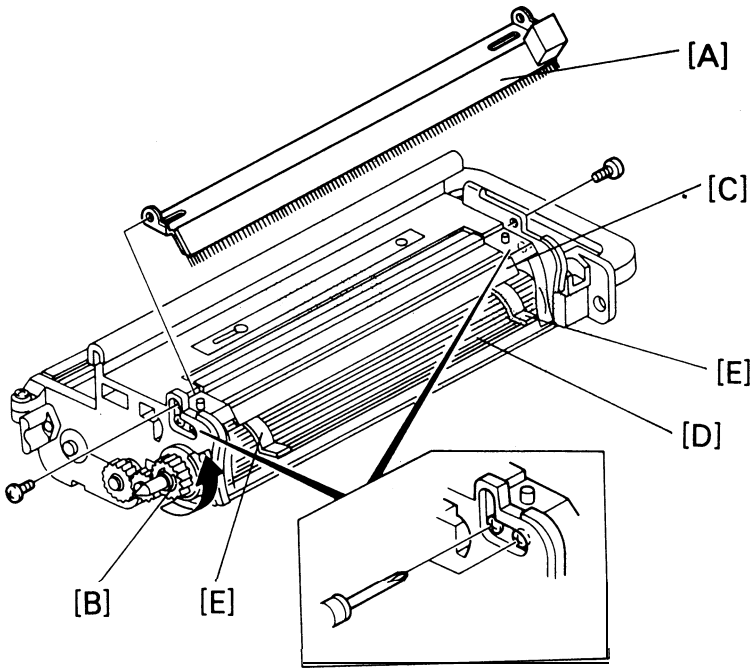
5. Press the "3" key, and then the "Start" key.

6. Confirm the reading on the digital multimeter.

7. If Vsg is incorrect, adjust VR102 on the main PCB in order to obtain 4 ± **0.2** volts.

8. Press the "C/S" key to stop the copier, turn off the main switch and turn off DPS 101-5.

2-5 **DOCTOR GAP ADJUSTMENT**



ADJUSTMENT STANDARD: 0.72 mm (0.028")

NOTE: This adjustment is done only when the doctor blade has been removed or replaced.

1. Remove the upper brush seal cover [A] (2 screws).

2. With the development roller facing upwards, turn the roller sleeve in the **opposite direction to normal operation** by using the development roller **gear [B],** until the roller is free from developer.

3. Loosen the doctor plate [C] (4 screws) and clean the development roller [D].

4. **Insert** the Doctor Gap Gauges [E] (P/N A01 79505) near both ends of the development roller between the doctor blade.

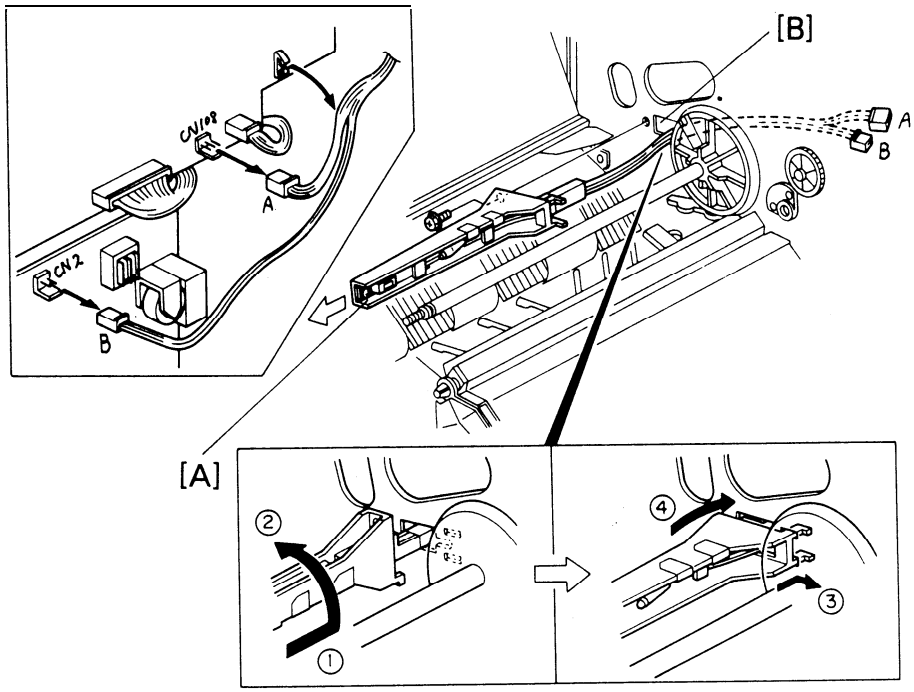
NOTE: Make **sure** the **development** roller, doctor blade gauges and doctor blade plate are free from developer.

5. Press the doctor blade plate and tighten the screws.

6. Pull out the doctor blade gauges.

Do not scratch the development sleeve with the gauges.

2-6 IMAGE DENSITY SENSOR AND DRUM Thermistor REPLACEMENT



1. Turn off the main switch and unplug the copier.

2. Remove the rear cover (2 screws).

3. Disconnect CNI 08 (3p) on the main PCB, and CN2 (2p) on the power pack.

4. Open the front cover, lower the T/S corona unit and remove the following parts:

a) development unit
b) charge corona unit
c) drum stay
d) cleaning unit
e) drum flange
f) drum.
g) drum guide.

5. Remove the image density sensor and drum thermistor assembly [A] (1 screw), by pulling towards the front of the machine.

NOTE: Take care not to drop the screw during removal and re-installation.

6. Replace the sensor assembly.

NOTE: a) When installing the assembly, first feed the two harnesses through the hole [B] and towards the rear of the machine.

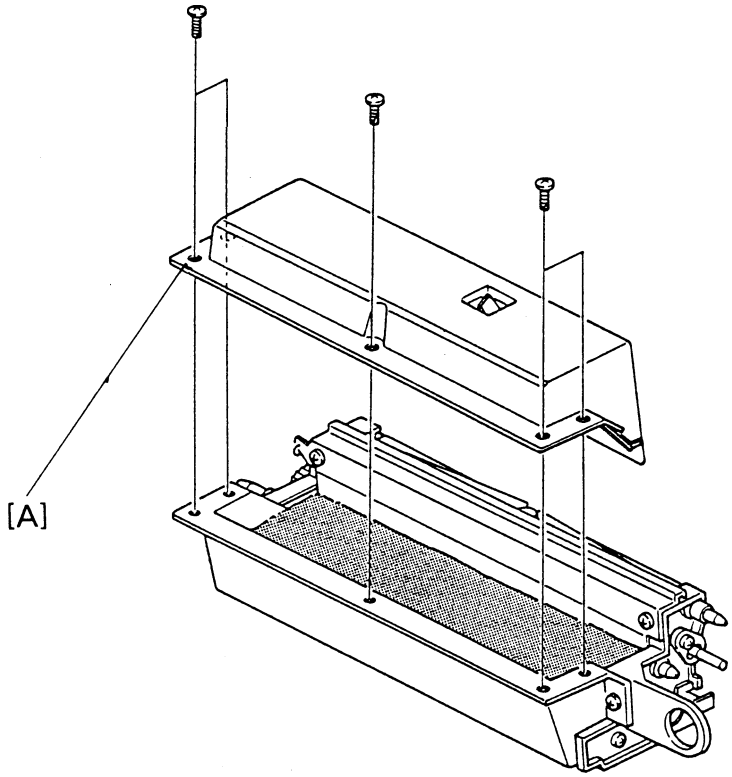
Then **with** the sensor facing downwards [C], insert the assembly in the hole and rotate to the left (1 and 2).

Install the assembly, making sure the 2 hooks and positioning pin are correctly fixed.

b) Take care not to move the drum thermistor out of position by releasing the thermistor clamp plate during removal and re-installation.

3. CLEANING

3-1 USED TONER DISPOSAL



1. Remove the cleaning unit, place it on a sheet of paper and turn the cleaning brush in the cleaning direction, in order to feed the remaining toner in the cleaning unit into the used toner tank.

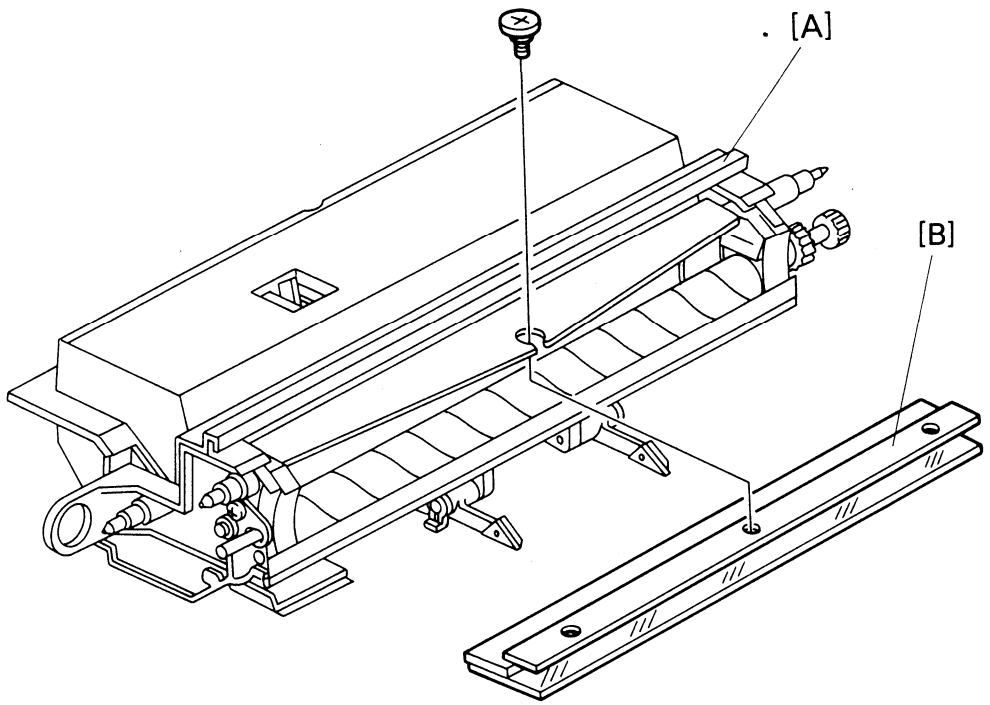
2. Remove the used toner tank upper cover [A] (5 screws).

3. Empty the used toner into the used toner bag.

NOTE: Dispose of the used toner according to local regulations.

4. Clean the gears and the exterior of the cleaning unit, then re-install the used toner tank upper cover, taking care not to damage the entrance mylar.

3-2 CLEANING BLADE REPLACEMENT

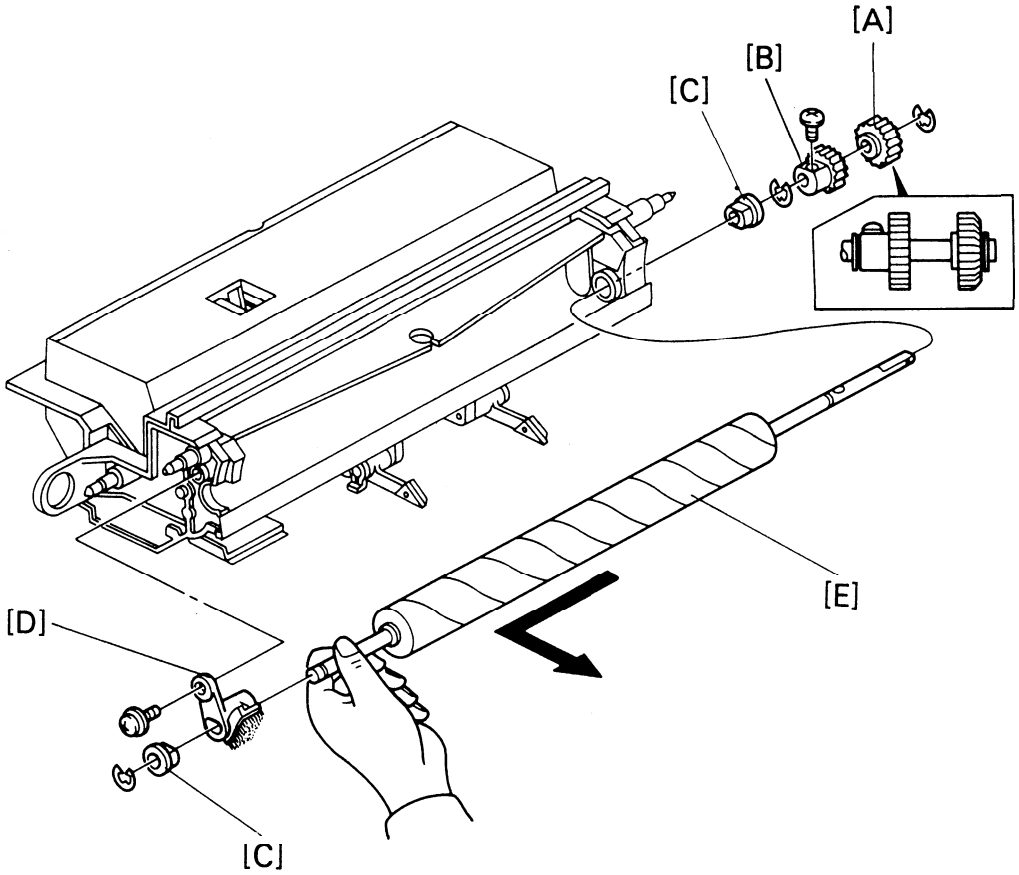


1. Remove the cleaning unit [A], and remove the cleaning blade [B] (1 shoulder screw).

2. Replace the cleaning blade being careful not to touch the edge of the blade.

After installing the blade, make sure it swivels from side to side.

3-3 CLEANING BRUSH REPLACEMENT



1. Remove the cleaning unit and remove the cleaning brush gear [A] (1 "E" ring).

2. Remove the cleaning brush idle gear [B] (1 screw), and the front and rear bushings [C] from the cleaning brush shaft (1 "E" **ring** each).

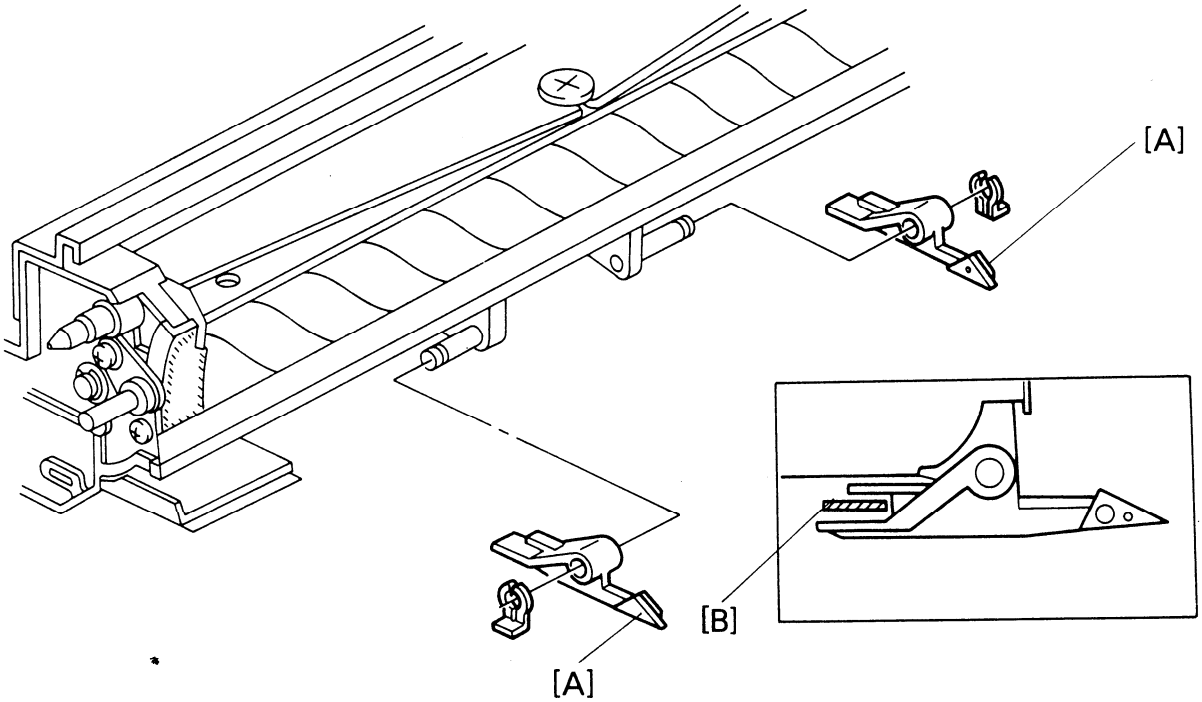
3. Remove the cleaning brush shaft holder [D] (1 screw), and **remove the cleaning brush** [E].

NOTE: When removing the cleaning brush, first remove the front end of the brush and then pull it out, taking care not to damage the mylar.

4. Holding the new cleaning brush by the shaft only, first fit the rear end of **the** brush in the shaft holder and then the front end.

NOTE: When re-installing the cleaning brush gear, make **sure the rounded-**edge of the gear is facing the rear of the machine.

3-4 **PICK-OFF PAWL REPLACEMENT**

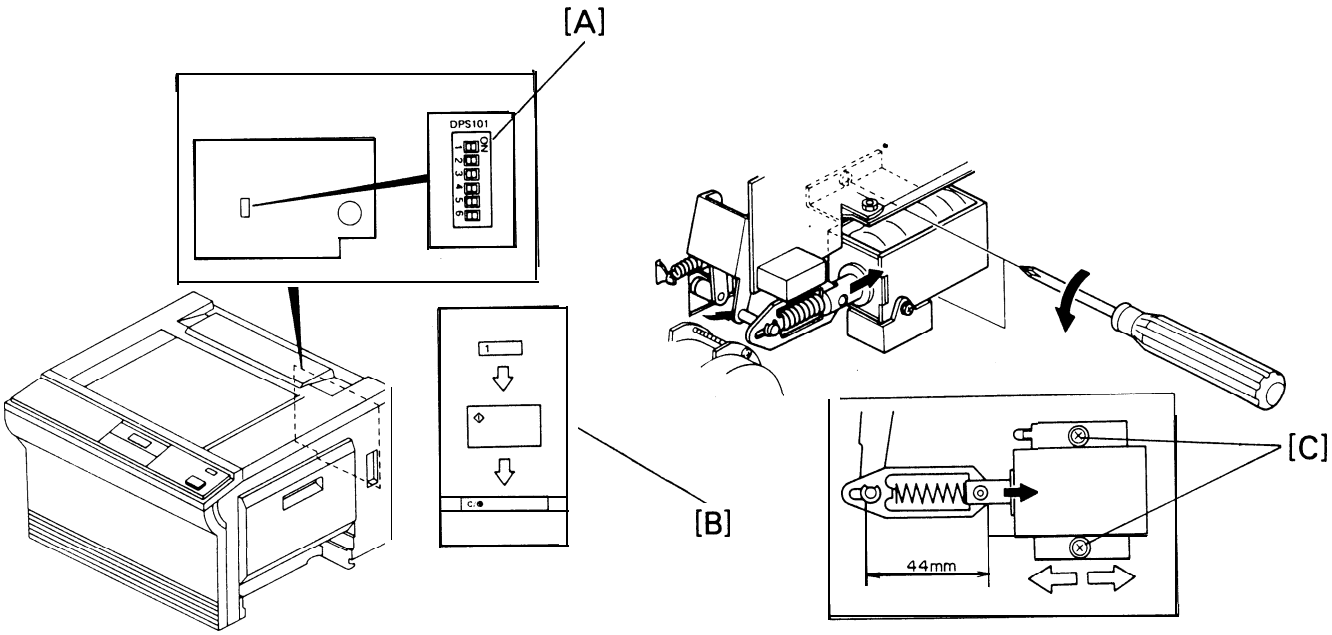


1. Remove the cleaning **unit and** remove the 2 **pick-off pawls** [A] (1 **snap ring each).**

2. Replace the pick-off pawls, making sure the pick-off bars [B] are fitted correctly in between the pick-off pawls' tails.

NOTE: When replacing the pick-off pawls, it is advisable to replace both of the pawls at the same time.

3-5 CLEANING PRESSURE ADJUSTMENT



ADJUSTMENT STANDARD :44 mm

Take care when doing this procedure as the power is on.

NOTE: When doing this procedure, make sure that the cleaning unit and the drum are fitted in the machine.

1. Turn off the main switch.

2. Remove the rear cover and turn on DPS 101-5 [A] on the main PCB.

3. Turn on the main switch, enter “1” in the 10 keys, and then press the “Start” key [B] (cleaning solenoid on).

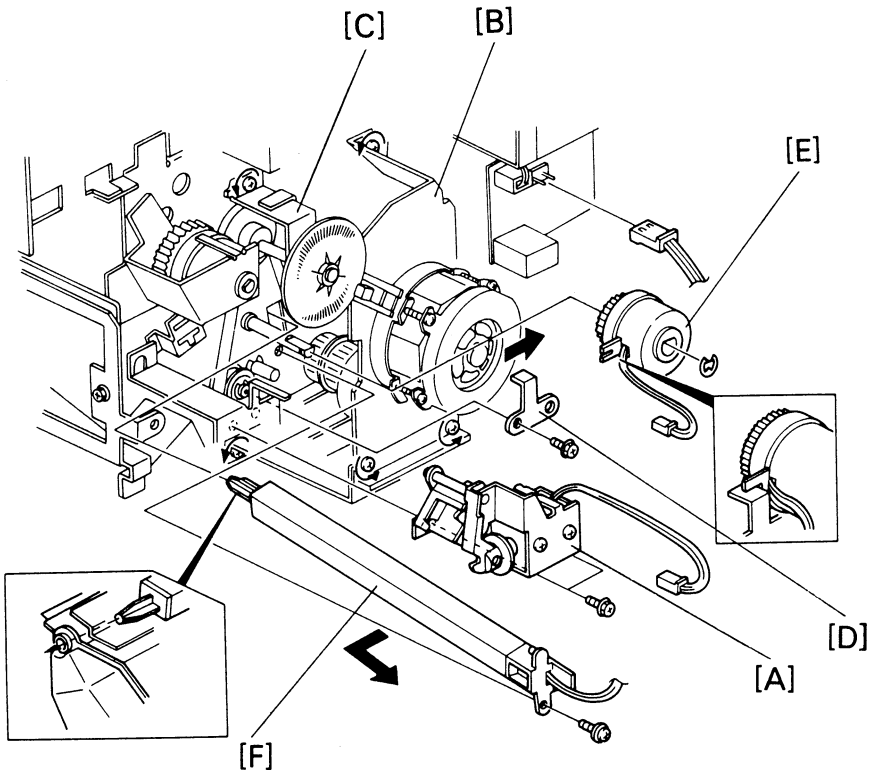
4. Loosen the 2 cleaning solenoid fixing screws [C], and move the assembly [D] until the distance between the two points (see illustration) is 44 mm.

5. Tighten the fixing screws and then press the “C/S” keY to stoP the coPier”

6. Turn off the main switch and turn off DPS 101-5.

4. QUENCHING

4-1 PRE-TRANSFER LAMP REPLACEMENT



1. Turn off the main switch and unplug the copier.

2. Remove the following parts:

   a) development unit
   b) charge corona unit
   c) drum stay
   d) cleaning unit
   e) drum flange
   f) drum
   g) main PCB.

3. Remove the paper feed solenoid assembly [A] (2 screws), and loosen the main motor assembly [B] (4 screws) and the pulse generator bracket [C] (1 screw).

4. Remove the registration clutch stopper bracket [D] (1 screw), and the registration clutch [E] (1 “E” ring).

NOTE: To ease the fitting or removing of the clutch, move the main motor assembly towards the right.

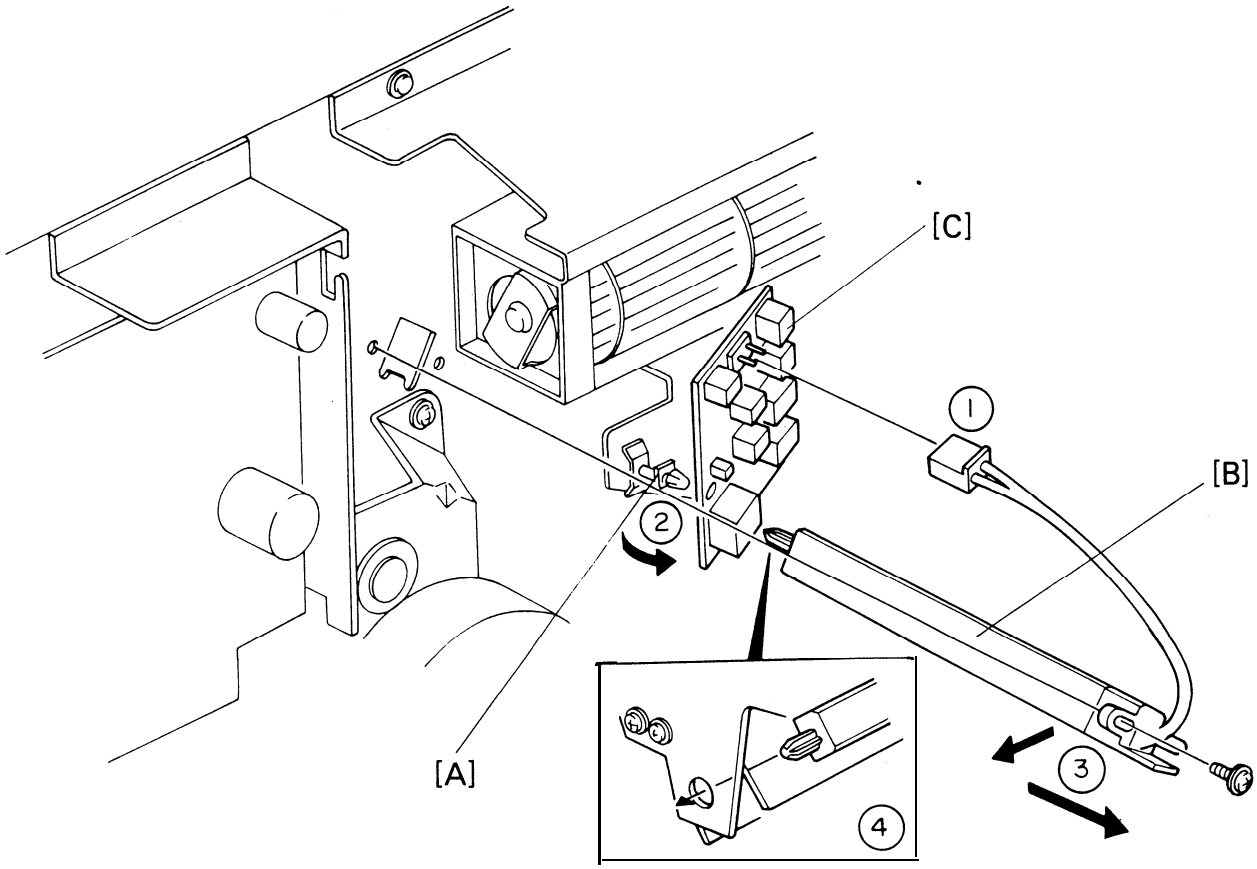
5. Remove the PTL [F] (1 screw, 1 connector) by pulling it out diagonally, thus not hitting the main motor.

6. Replace the PTL.

NOTE: a) When re-installing the PTL, confirm the positioning pin is correctly inserted.

b) Make sure the groove of the registration clutch is correctly engaged with the stopper bracket.

4-2 QUENCHING LAMP REPLACEMENT



1. Turn off the main switch and unplug the copier.

2. Remove the following parts:

a) **development unit**
b) charge corona unit
c) drum stay
d) cleaning unit
e) drum flange
f) drum.

3. Remove the left locking support [A] on the ac PCB **[C]**

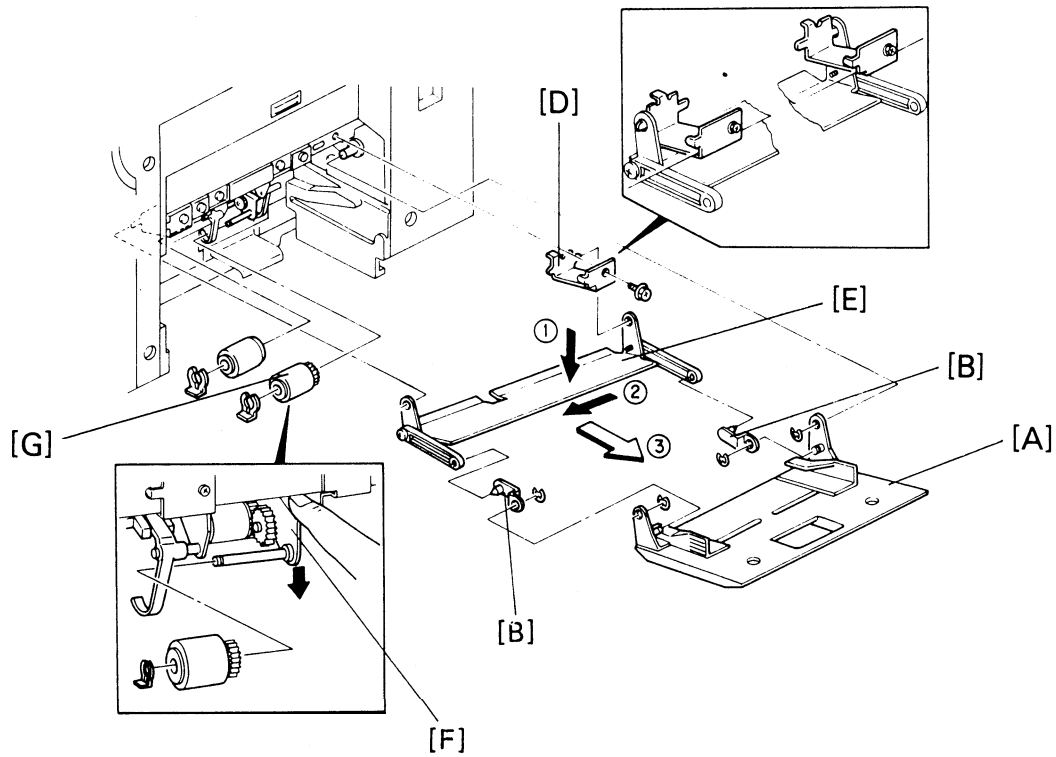
4. Remove the quenching lamp [B] (1 screw, 1 connector, 1 wire clamp) while swinging the ac PCB to **the** right.

5. Replace the quenching lamp.

NOTE: When re-installing the quenching lamp, confirm the positioning pin is correctly inserted.

5. PAPER FEED

5-1 PICK-UP AND FEED ROLLER REPLACEMENT



1. Open the manual feed table [A], and remove the front and rear manual feed links [B] (1 "E" ring each).

2. Remove the manual feed table (1 "E" ring, 1 stud screw).

3. Remove the right plate holder [D] (1 screw), and remove the manual feed plate [E].

4. Gently push down the pick up bracket [F] and remove the pick up roller [G] (1 snap ring).

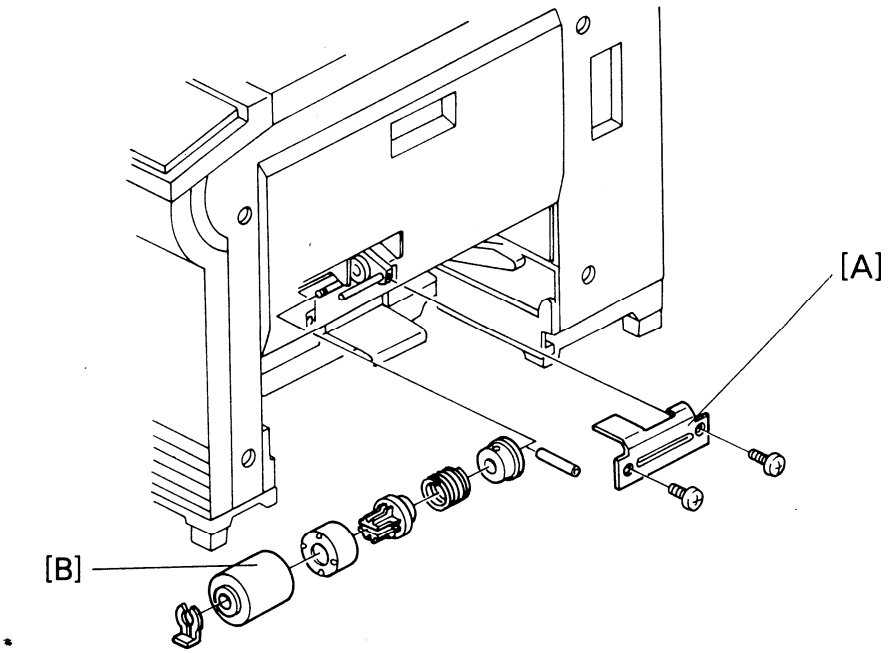
5. Remove the feed roller (1 snap ring).

6. Replace both rollers.

NOTE: a) When replacing the feed roller, make sure that the open end of the roller faces the rear of the machine.

b) When re-installing the manual feed plate, make sure the cut out area is facing the inside of the copier as shown.

5-2 **REVERSE ROLLER REPLACEMENT**



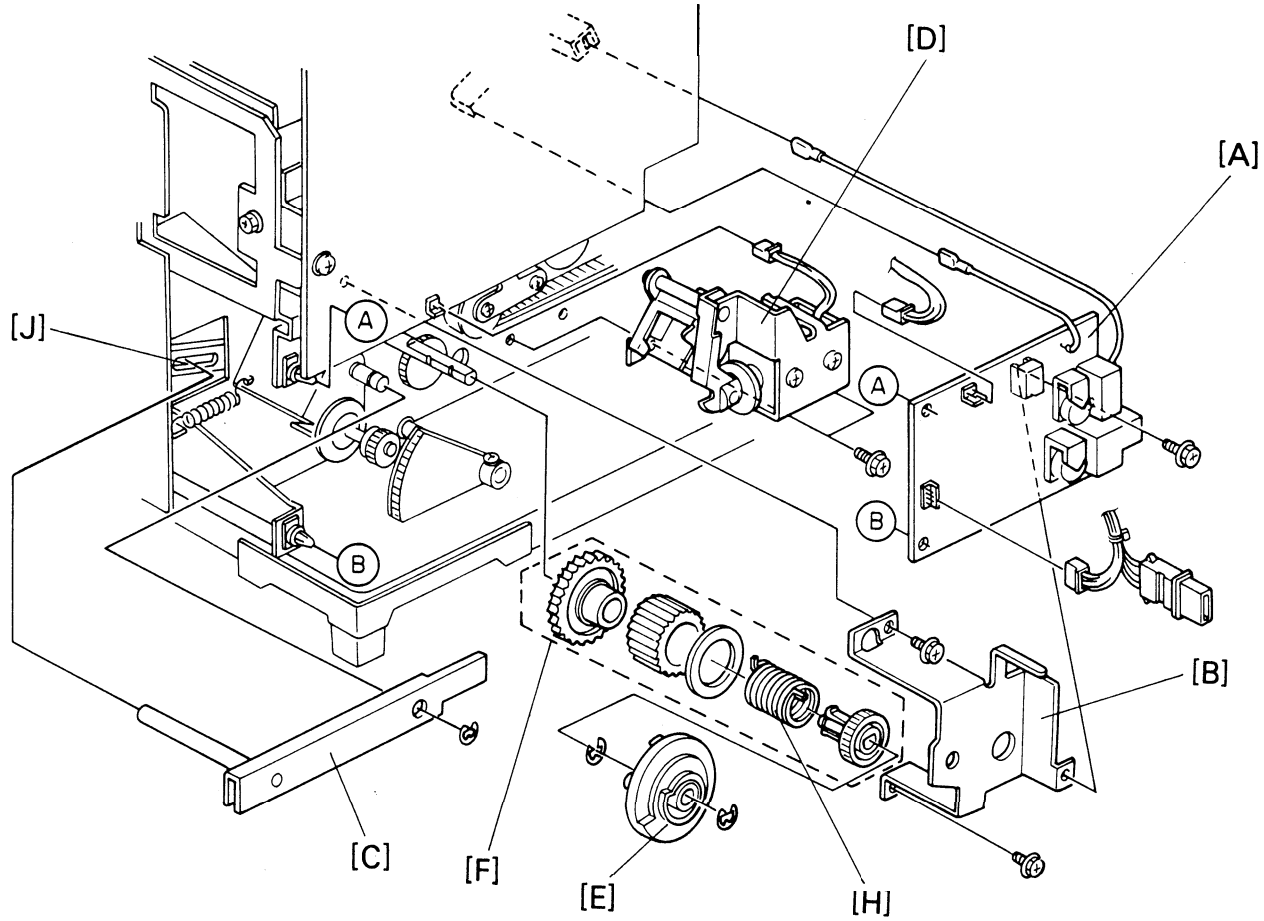
1. Remove the reverse roller cover [A] (2 screws), **the reverse** roller [B] (1 **snap ring), and the slip clutch assembly.**

2. Disassemble the slip clutch assembly, clean and lubricate the spring with Mobil Temp 78.

3. Reassemble the clutch assembly, making sure that the pin fits correctly into the cut-out part of the assembly.

4. Replace the reverse roller.

5-3 PAPER FEED CLUTCH LUBRICATION



1. Turn off the main switch and unplug the copier.

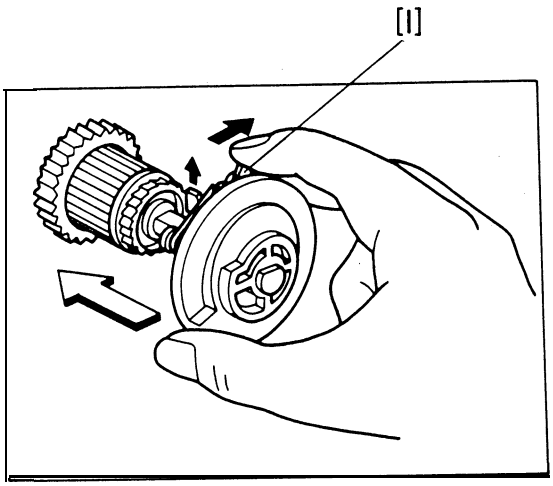
2. Remove the rear cover (2 screws) and the right cover **(4** screws).

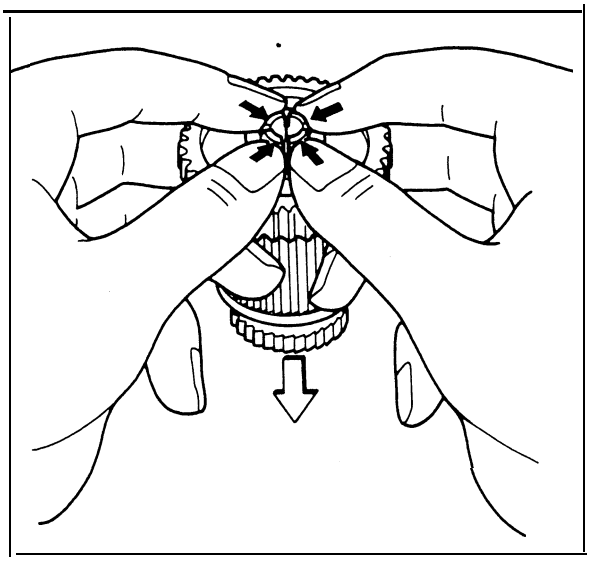
3. Remove the CTB power pack [A] (1 screw, 2 locking supports, 2 connectors, 3 **terminals).**

4. Remove the paper feed clutch bracket **[B]** (2 screws, 1 wire clamp).

In order not to damage the main PCB, pull out the lower part of the bracket first.

5. Remove the pick-up arm [C] (1 "E" **ring), paper** feed solenoid assembly [D] (2 screws, 1 connector), and the feed clutch cam **[E] (1 "E"** ring).





6. Remove the paper feed clutch [F] (1 "E" ring), and disassemble the clutch (see illustration).

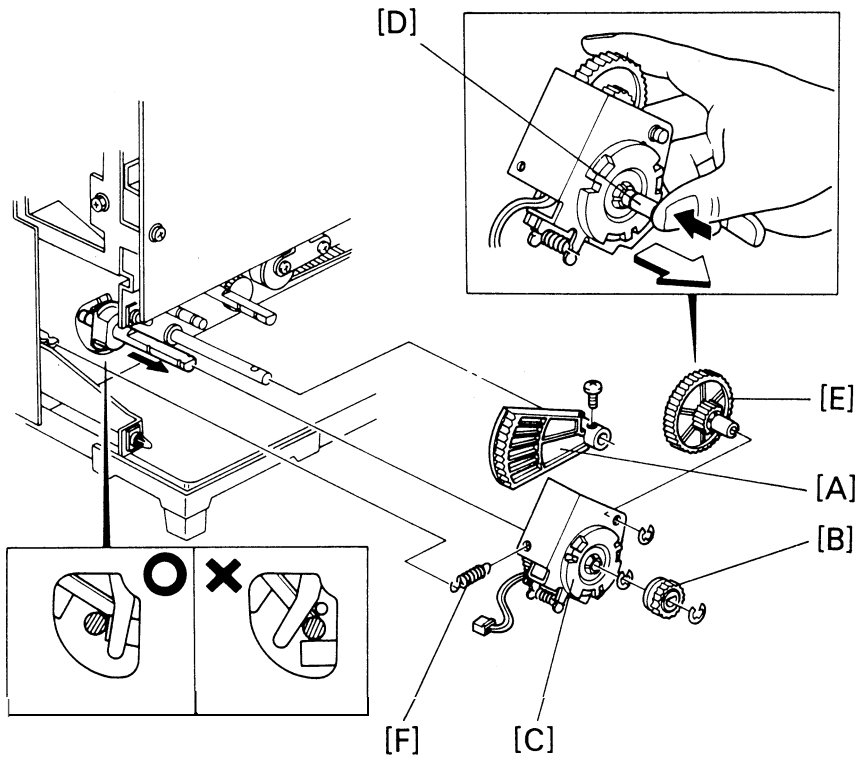
7. Clean and lubricate the clutch spring with Mobil Temp. **78, then** assemble the clutch, making sure that the spring [H] is fitted correctly (see illustration). Then fit the washer and the ratchet.

8. Reassemble all parts.

NOTE: a) Open the ratchet pawl [1] when re-installing the cam on the shaft.

b) Make sure the rod of the pick-up arm [C] is correctly positioned **in between the pick-up lever** [J] (see illustration).

5-4 PAPER LIFT CLUTCH REPLACEMENT



1. Turn off the main switch and unplug the copier.

2. Remove the rear cover (2 screws), and the right cover (4 screws).

3. Remove the power pack (1 screw, 2 locking supports, 2 connectors, 3 terminals), and remove the sector gear (1 screw) [A].

4. Remove the paper feed clutch bracket (2 screws, 1 wire clamp).

In order not to damage the main PCB, pull out the lower part of the bracket first.

5. Remove the pick-up roller arm (1 "E" ring), paper feed solenoid assembly (2 screws, 1 connector), and the feed clutch cam (1 "E" ring).

6. Remove the paper lift gear [B] (1 "E" ring), and the paper lift clutch assembly [C] (2 "E" rings, 1 connector, 1 spring).

NOTE: a) For easy removal, pull the assembly and push the drive shaft [D] at the same time. Do not manually rotate the drive shaft [D]. This action may deform the clutch spring.

b) Take care not to drop the idle gear [E] when removing the assembly.

7. Fit the lift release spring [F] to the new paper feed clutch assembly and install the assembly.

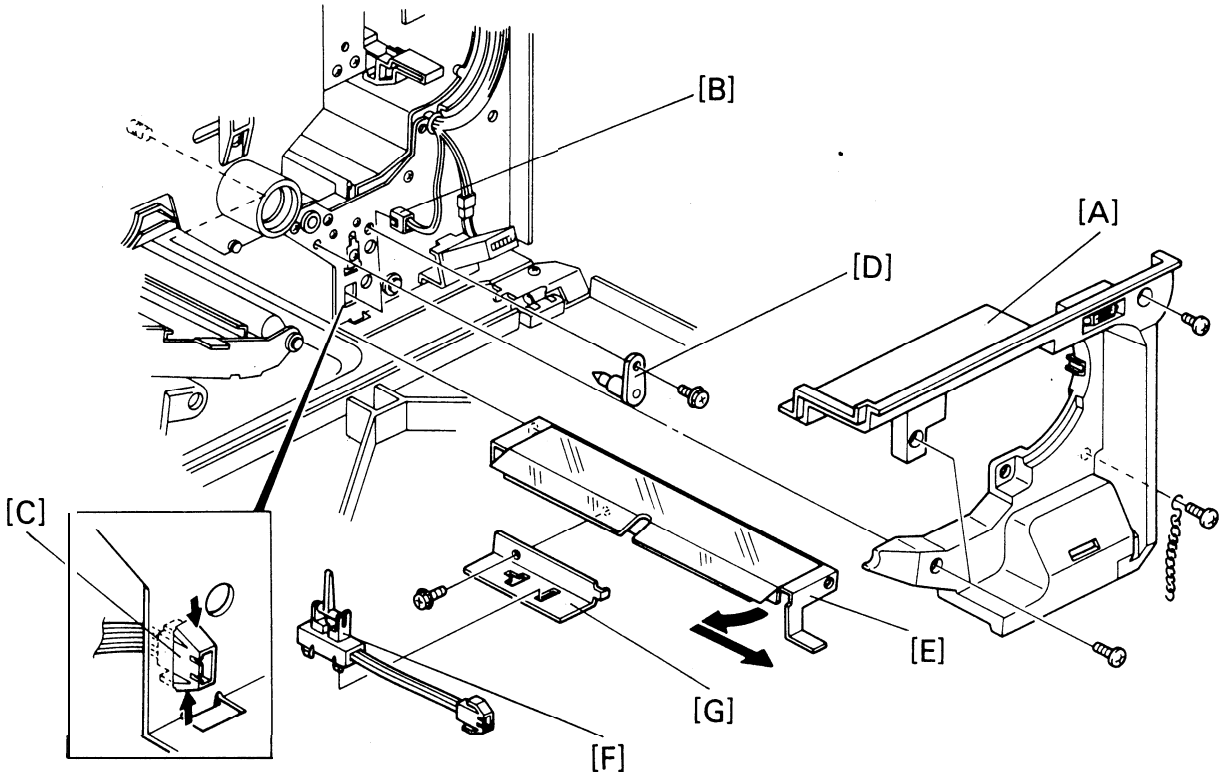
NOTE: a) When installing the assembly, make sure that the lift clutch shaft is in the correct position (see illustration) and take note that it has a "D" **cut** when installing the clutch.

b) When re-installing the paper lift drive gear, make sure the non-toothed part of the gear faces inwards.

c) In case the lift pressure spring becomes loose, the following procedure should be followed:

(1) **remove the manual** feed table
(2) remove the rear cassette guide (2 screws, 1 positioning tab)
(3) re-install the shaft spring
(4) when re-installing the rear cassette guide, slightly pull the shaft towards the rear at the same time.

5-5 REGISTRATION SENSOR REPLACEMENT



1. Turn off the main switch.

2. Open the front cover and remove the development unit.

3. Remove the right inner cover [A] (4 screws).

4. Uncouple the registration sensor connector [B] and snap-out the male connector [C] from the front plate (see illustration).

5. Lower the transport unit and remove the T/S corona unit.

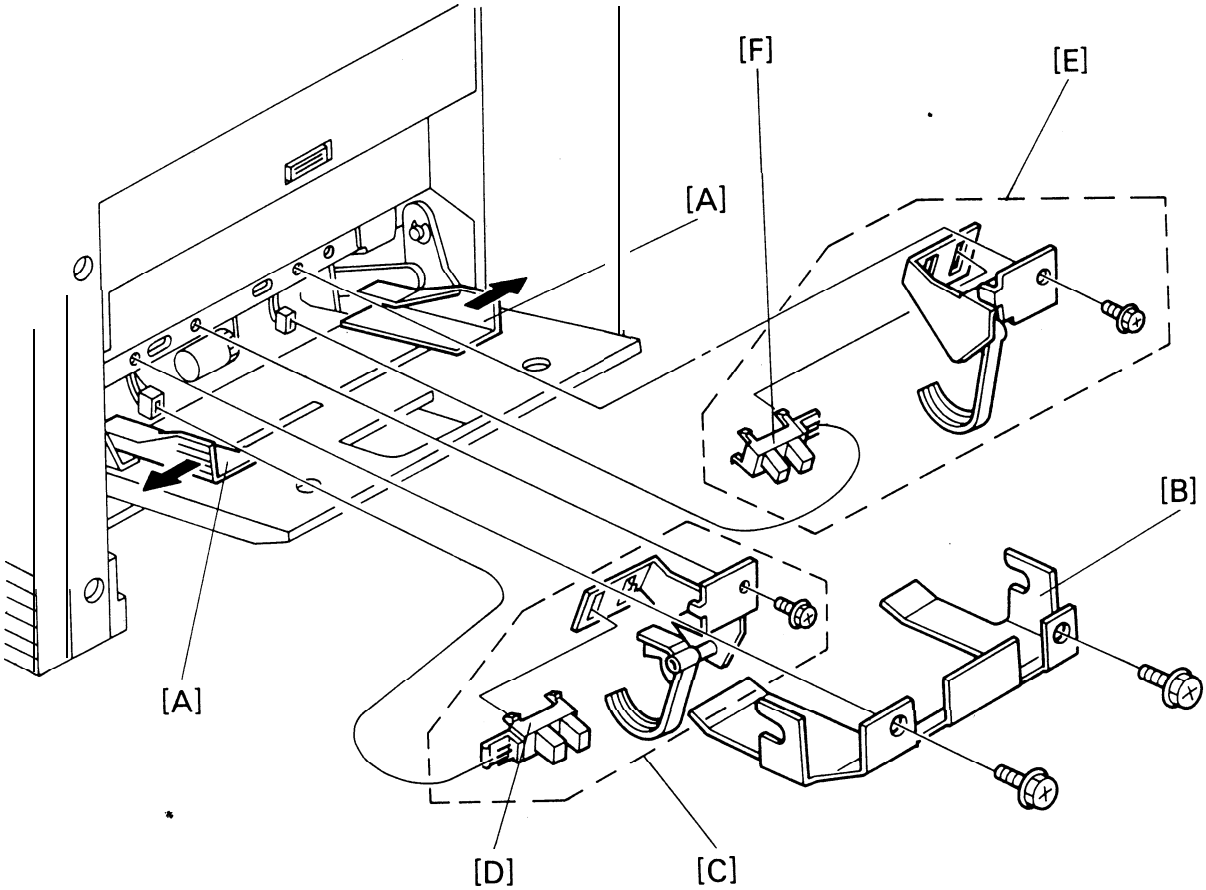
6. Remove the front holding pin [D] (1 screw), and remove the registration guide [E] taking care that the guide does not full.

7. Remove the registration sensor [F] and bracket [G] (1 screw, 1 connector) from the registration guide [E].

8. Separate the sensor from the bracket and replace it.

NOTE: When re-installing, make sure the rear of the registration guide is correctly fitted over the rear holding pin.

5-6 PAPER END AND PAPER LIFT SENSOR REPLACEMENT



1. Turn off the main switch.

2. Open the manual feed table and slide the paper guides [A] to their widest position.

3. Remove the upper entrance guide [B] (2 screws).

- **Paper End Sensor -**

4. Remove the paper end sensor assembly [C] (1 screw, 1 connector).

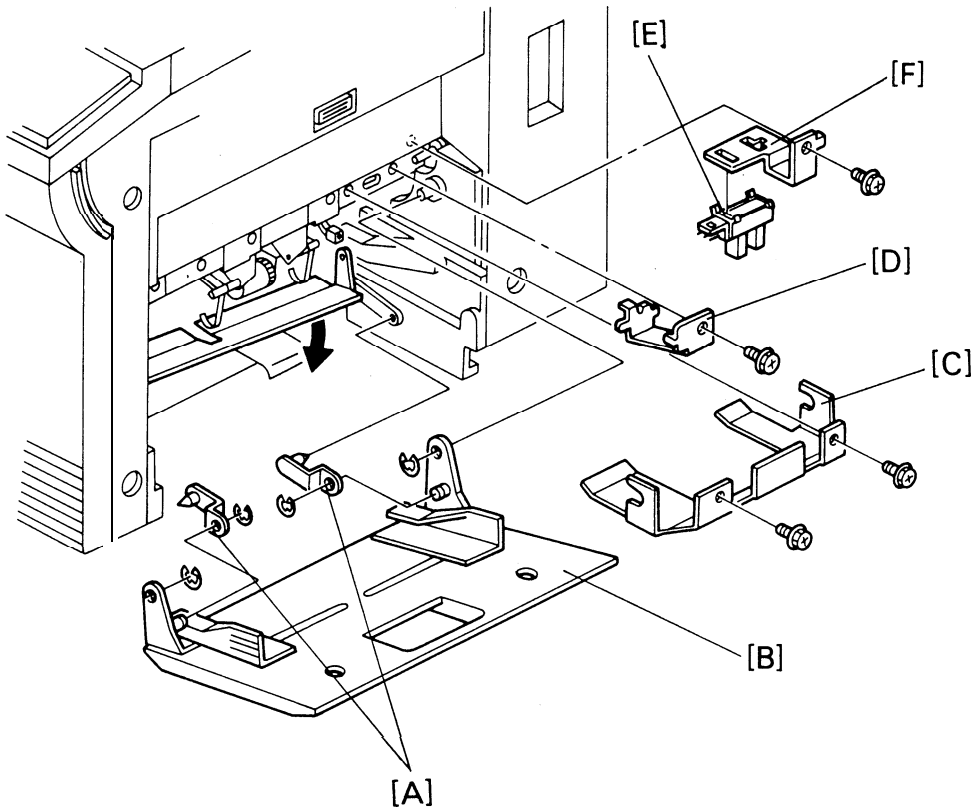
5. Separate the sensor [D] from the bracket, and replace the sensor.

- Paper Lift Sensor -

4. Remove the paper lift sensor assembly [E] (1 screw, 1 connector)

5. Separate the sensor [F] from the bracket, and replace the sensor.

5-7 **MANUAL FEED SENSOR REPLACEMENT**



1. Turn off the main switch.

2. Remove the front and rear manual feed links [A] (1 “E” ring each), and then remove the manual feed table [B] (1 “E” ring, 1 stud screw).

3. **Remove the upper entrance guide [C] (2 screws).**

4. Remove the right plate holder [D] (1 screw).

5. Remove the manual feed sensor [E] with the bracket [F] (1 screw, 1 connector).

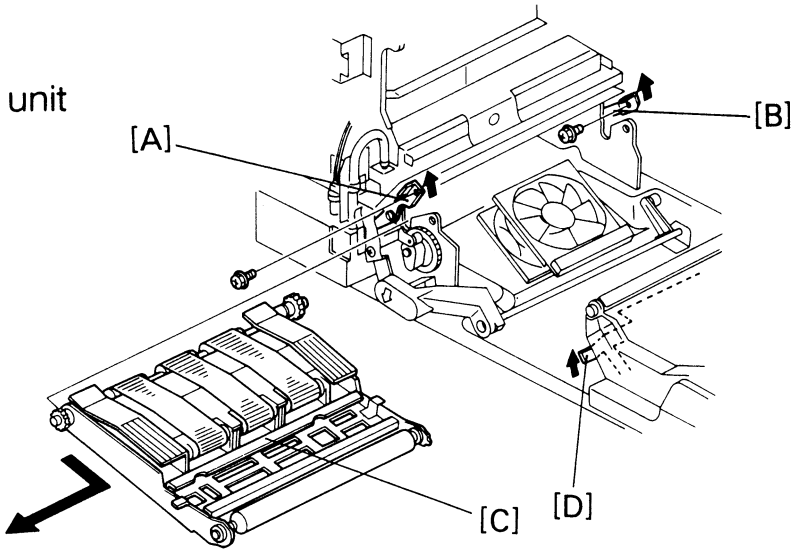
6. Separate the sensor **[E]** from the bracket and replace the sensor.

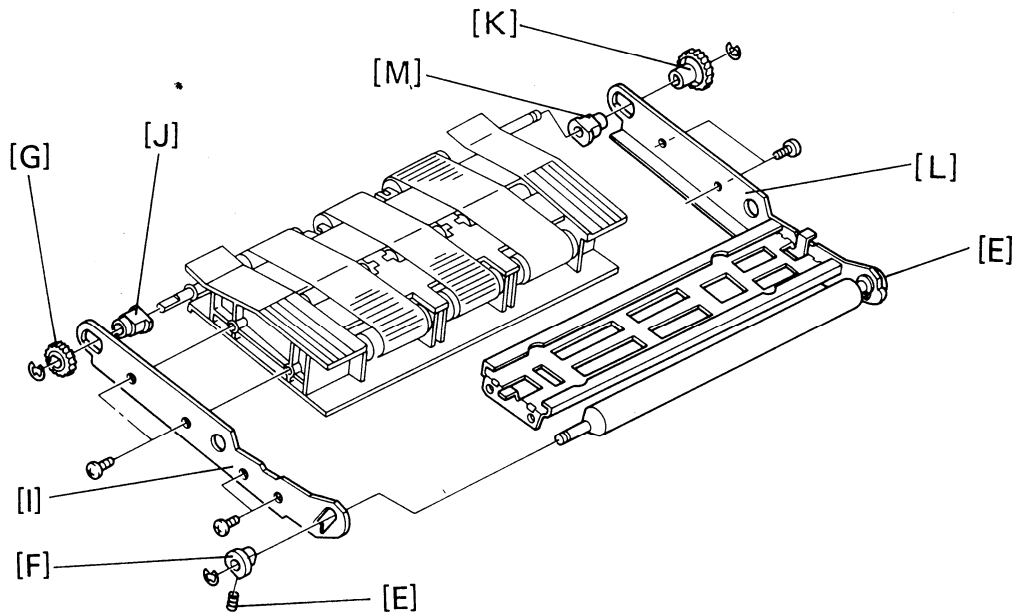
6. TRANSPORT AND FUSING

6-1 TRANSPORT BELT REPLACEMENT

1. Open the front cover and remove the following parts:.

a) development unit
b) main charger corona unit
c) drum stay
d) cleaning unit
e) drum flange
f) drum
g) drum guide
h) transfer corona unit.

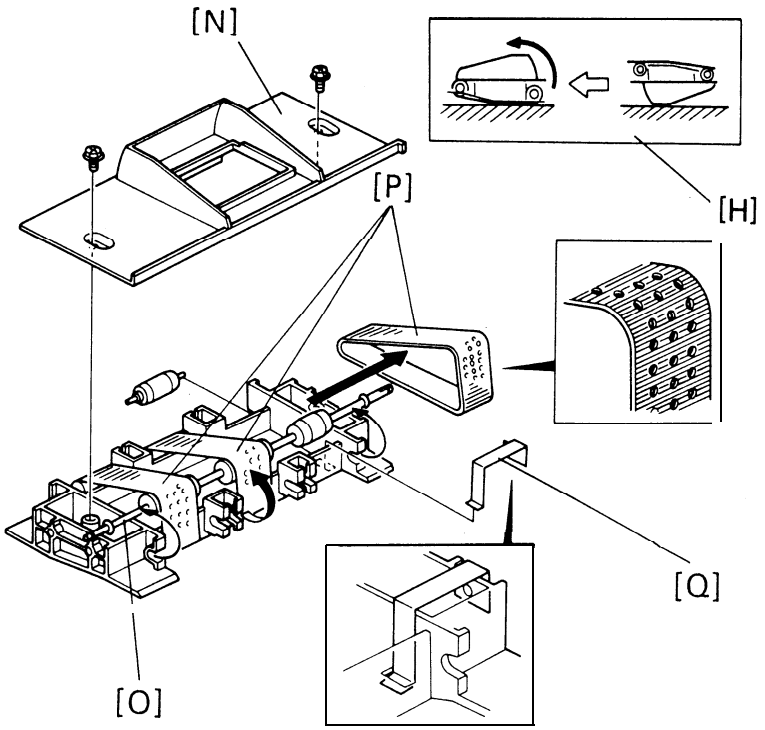




2. Remove the left inner cover (3 screws), open the exit cover and remove the fusing cover (2 screws).

3. Unfix the front [A] and rear [B] stoppers (1 screw each) and take out the transport unit [C] whilst holding up the registration guide [D].

4. Remove the front and rear pressure springs [E] (1 each), and remove the front registration roller bushing [F] (1 “E” ring).



5. Remove the front transport gear [G] (1 "E" ring), and the front transport bracket **[1]** (4 screws).

6. Take off the front transport drive shaft bushing [J], and remove the rear transport gear [K] (1 "E" ring).

7. Separate the transport belt assembly from the rear transport bracket [L] (2 screws), and take off the rear transport drive shaft bushing [M].

8. Turn over the transport belt assembly [H], and remove the lower transport cover [N] (2 screws).

9. Move the transport drive shaft [0] out of position, releasing the transport belt tension.

10. Replace all 3 transport belts [P].

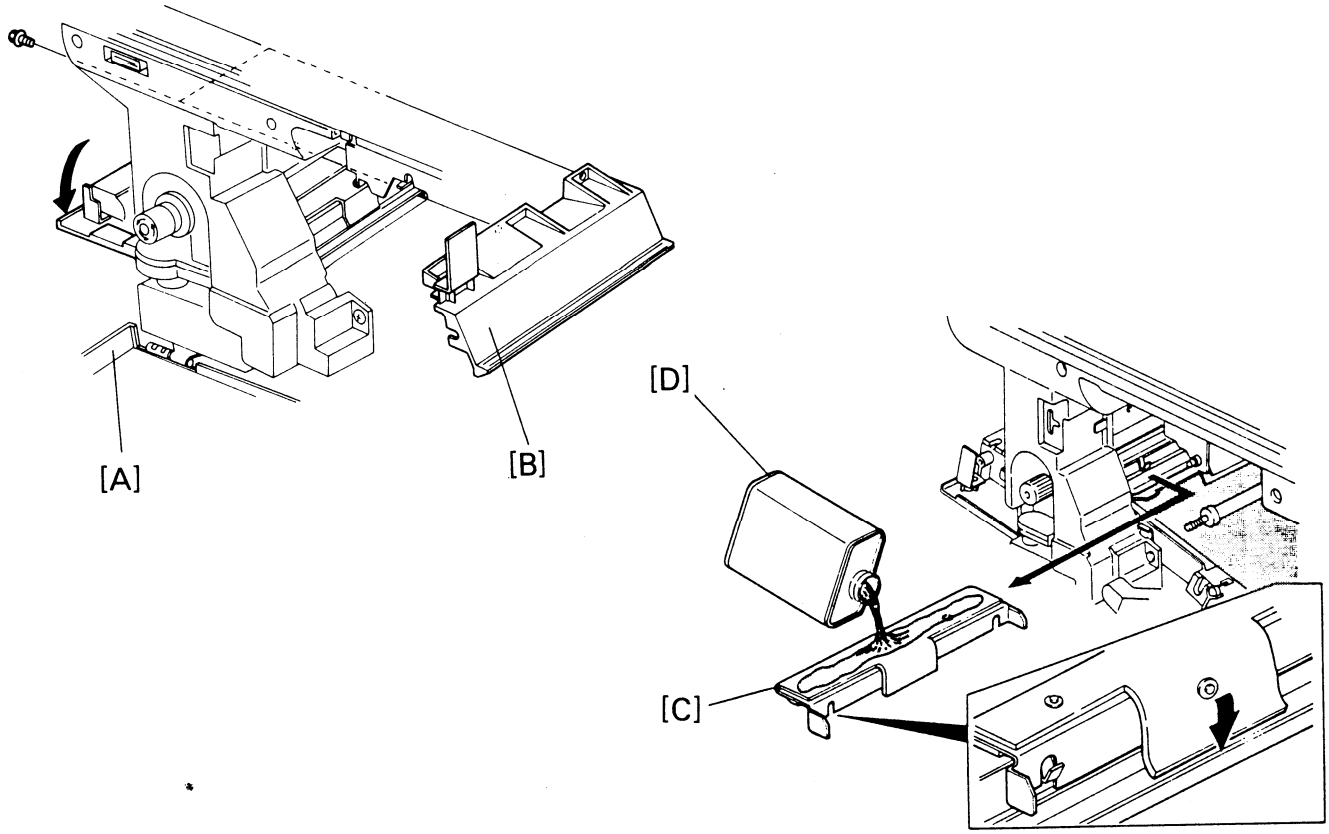
NOTE: a) It is advisable to replace all 3 belts at the same time, making sure that the ribbed side of the belt is facing outwards.

b) When re-installing the transport belt assembly, make sure that the transport grounding plate [Q] is in its correct position.

c) When re-installing the rear transport gear, make sure it is facing the rear of the copier.

d) After assembling the unit, turn the drive shaft to correctly position the transport belts.

6-2 OIL SUPPLY PAD REPLACEMENT



1. Open the front cover and remove the following parts:

a) development unit
b) main charger corona unit
c) drum stay
d) cleaning unit
e) drum flange
f) drum
g) drum guide.

2. **Open the exit cover [A] and remove the fusing cover [B] (2 screws).**

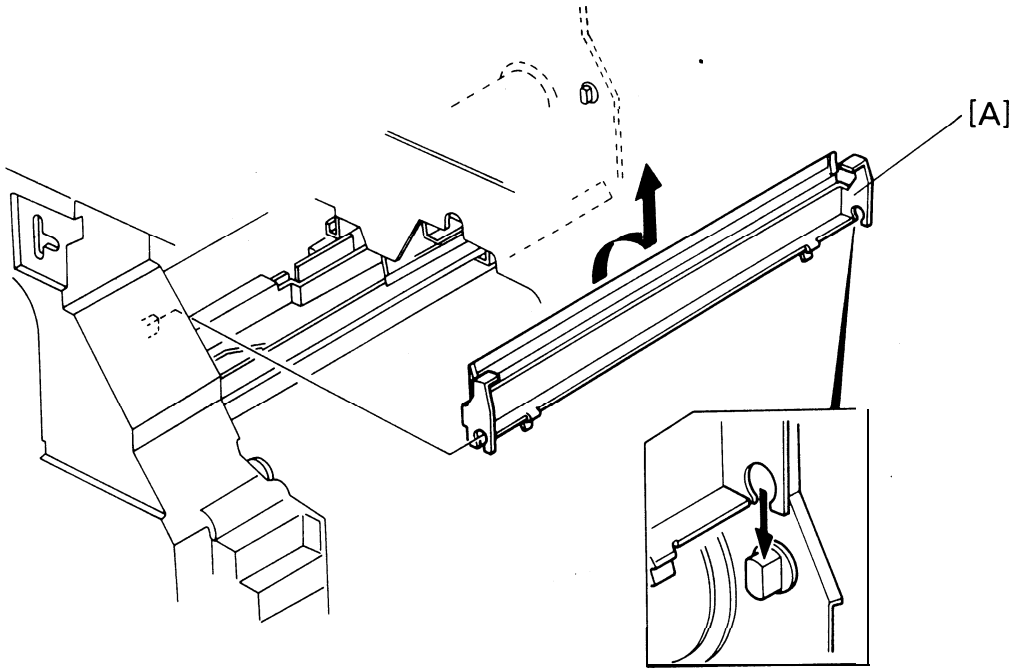
3. **Lift out the oil supply pad [C] and replace it.**

NOTE: a) Before fitting the new pad, it should be primed with silicone oil [D]

b) The notches of the oil supply pad should rest on the 2 hooks Of the oil blade bracket.

c) Make sure that the oil Supply pad tail is placed in the oil sump.

6-3 OIL BLADE REPLACEMENT



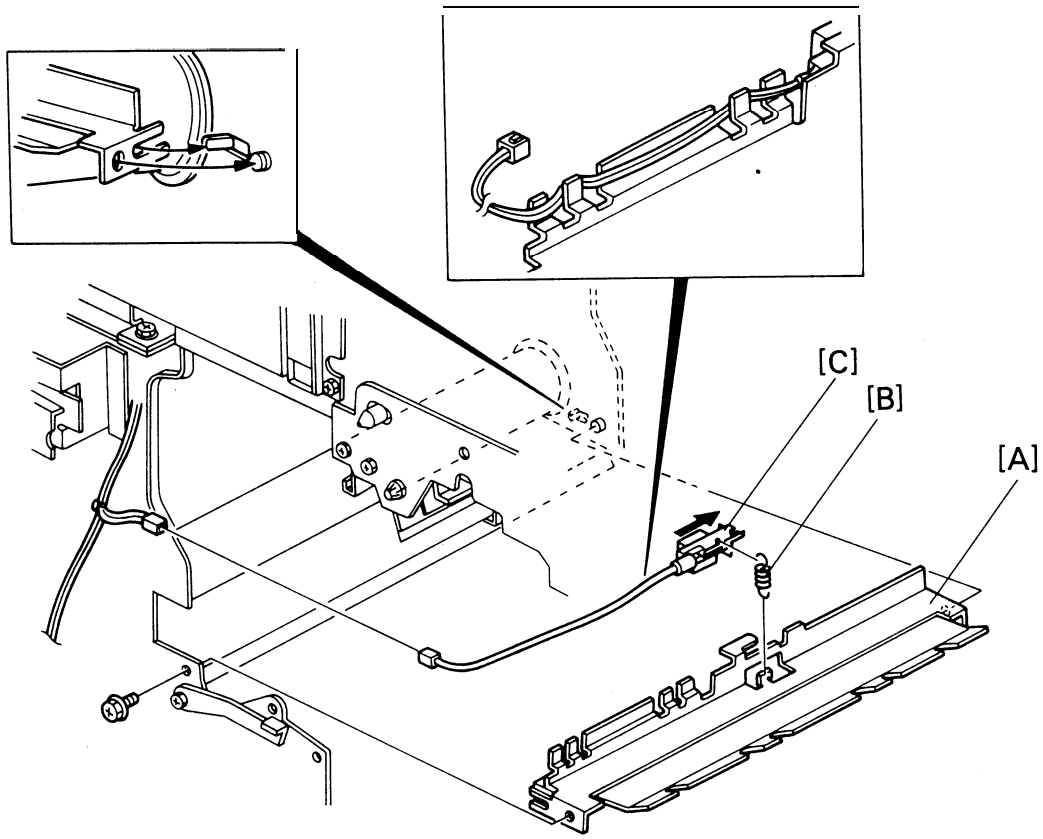
1. Remove the oil supply pad (see 6-2 Oil Supply Pad Replacement).

2. Turn and lift out the oil blade assembly [A].

3. **Separate the blade from the bracket** (3 screws) and replace the oil **blade.**

NOTE: Before fitting the oil blade assembly, prime the edge **of the blade** with silicone oil.

6-4 **FUSING THERMISTOR REPLACEMENT**



1. Remove the oil blade assembly (see 6-3 Oil Blade Replacement).

2. Pull off the fusing knob, turn the silicone oil **tank mouth to the front and** remove the left inner cover (3 **screws).**

3. Remove the silicone oil tank assembly (2 screws, 1 connector, 1 wire clamp), and remove the oil sump.

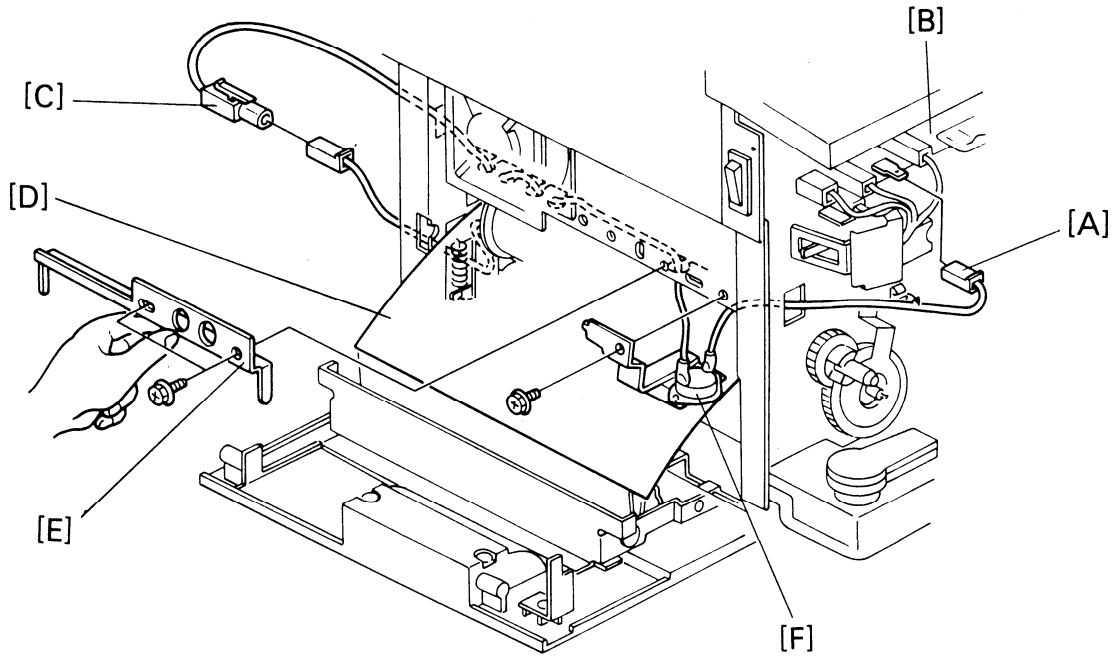
4. Remove the upper fusing entrance guide [A] (1 screw, 1 connector, 1 wire clamp), and unhook the thermistor spring [B].

5. Replace the fusing thermistor [C].

NOTE: a) When installing the thermistor, make sure the harness is correctly wound around the upper fusing entrance guide.

b) During re-installation, make sure that the holes of the guide and the tab of the oil sump are in their correct position, and that the oil end sensor holder is correctly positioned in the **sensor groove.**

6-5 **THERMOSWITCH REPLACEMENT**



1. Turn off the main switch and unplug the copier.

2. Remove the fusing cover (see 6-2 Oil Supply Pad Replacement), and the left inner cover (3 screws).

3. Disconnect the thermoswitch terminal [A] from the lamp control PCB [B] and release the harness from the 2 wire clamps.

4. Remove the rear cover and left covers, and un-couple the rear fusing lamp connector [C] and release the harness from the wire clamp.

5. Place a sheet of paper [D] over the top of the hot roller.

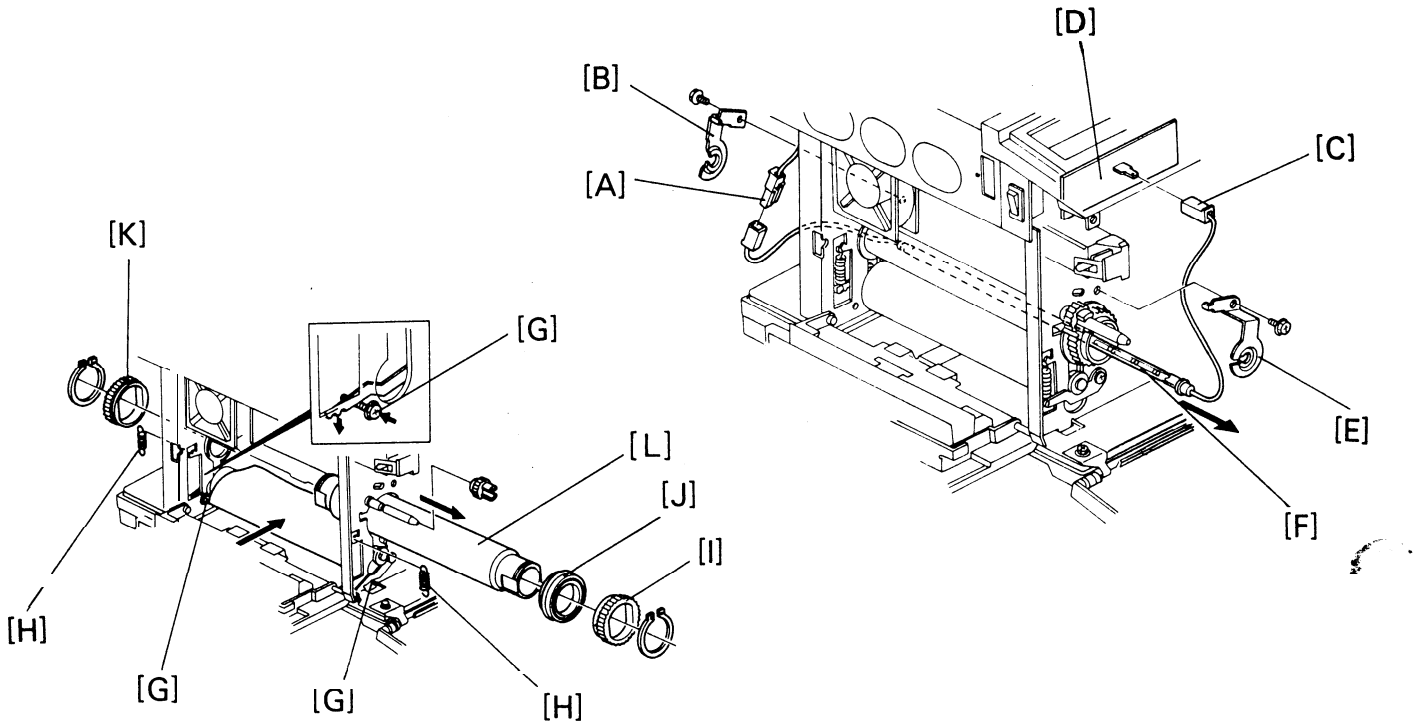
6. Remove the stripper pawl setting plate [E] (2 screws), taking care that it does not drop and damage the fusing rollers.

7. Remove the thermoswitch [F] (1 screw), taking care not to damage the hot roller.

8. Replace the fusing thermoswitch, making sure that the harness is correctly run over the exhaust blower bracket.

NOTE: Take care not to bend the thermoswitch during this procedure.

6-6 HOT ROLLER REPLACEMENT



1. Turn off the main switch and unplug the copier.

2. Remove the fusing thermistor assembly (see 6-4 Fusing Thermistor Replacement), and the rear cover (2 screws).

3. Un-couple the rear fusing lamp connector [A] and remove the holder [B] (1 screw).

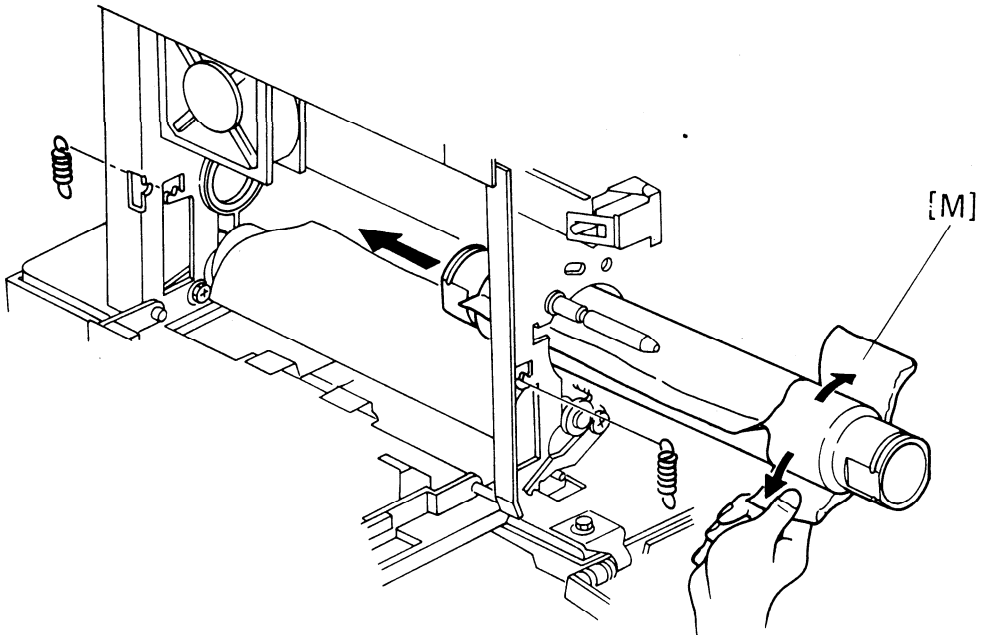
4. Disconnect the fusing lamp terminal [C] from the lamp control PCB [D] and release the harness from the wire clamp.

5. Remove the front fusing lamp holder [E] (1 screw), and pull out the fusing lamp [F].

Do not touch the surface of the fusing lamp with your bare hands. Hold the lamp terminals at all times.

6. Place a screw in the front and rear un-tapped holes [G] (see illustration), and remove the pressure springs [H].

NOTE: This is to hold the pressure roller when releasing the pressure springs, as the roller drops and could be damaged.



7. Place a sheet of paper in between the hot and pressure rollers.

8. Remove the front hot roller gear [1] and bearing [J] (1 "C" ring).

9. Remove the rear hot roller gear [K] (1 "C" ring), taking care that the bearing does not drop down and damage the pressure roller.

10. Slide out the hot roller [L] from the front side, taking care not to damage the fusing thermoswitch.

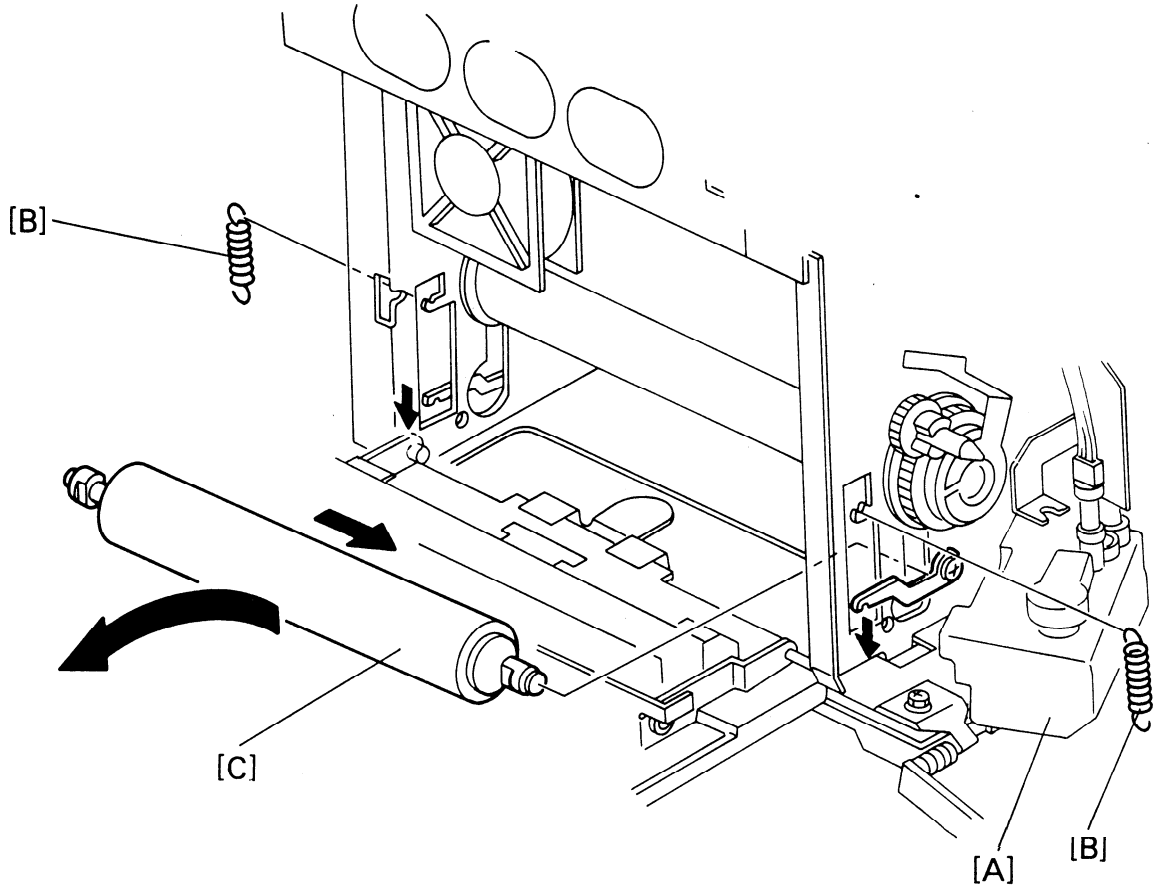
11. Tear off the ends of the protective paper [M] from the new hot roller and install it.

NOTE: This is to make sure that the fusing thermoswitch is not damaged by the protective paper.

12. After installation of the hot roller, bearing, and gears, remove the sheet of paper in between the hot and pressure rollers, and then remove the protective paper.

13. Re-install the pressure springs, making sure not to forget to remove the 2 screws from the un-tapped holes holding the pressure roller.

6-7 PRESSURE ROLLER REPLACEMENT



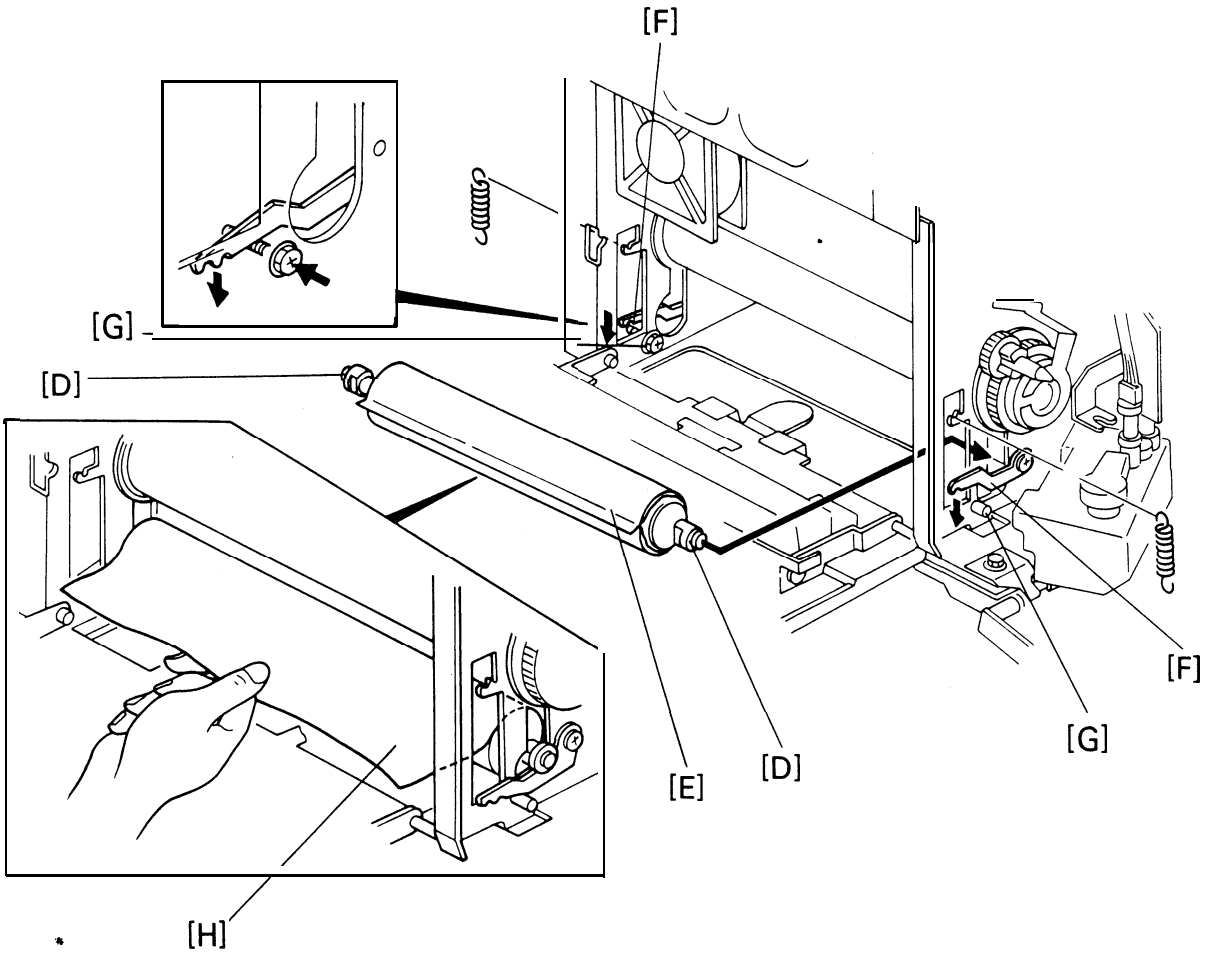
1. Turn off ;he main switch and unplug the copier.

2. Remove the following covers:

a) left inner cover (3 screws)
b) rear cover (2 screws)
c) lock plate cover (1 screw)
d) left cover (4 **screws).**

3. Remove the 2 screws of the oil bracket and swing the silicone oil tank [A] to the right.

4. **Remove the 2 pressure springs [B] and take out the pressure roller** [C],



5. Remove the 2 bushings [D] (1 “E” ring each), and fit them on the new pressure roller **[E] .**

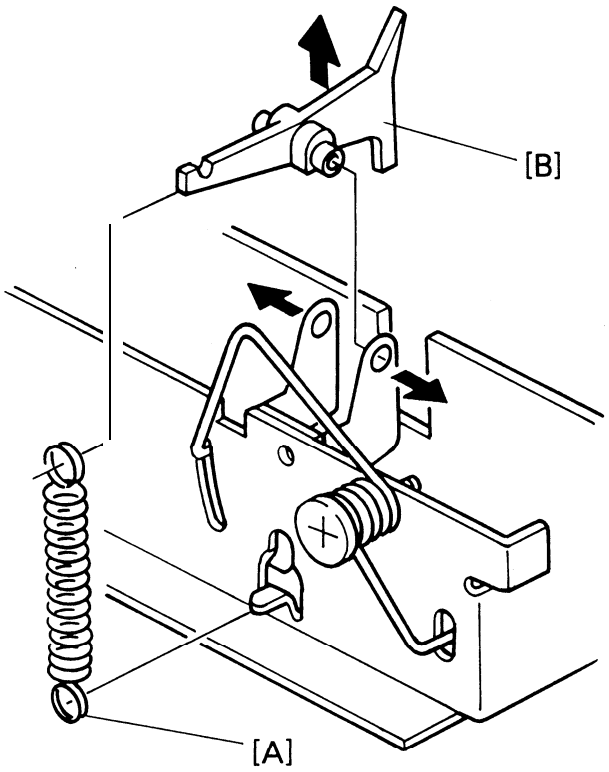
6. Install the new pressure roller and set it in the pressure release position by lifting the pressure levers [F] and placing two screws [G] in the untapped holes (see illustration).

7. Remove the protective paper [H], fit the pressure springs and remove the 2 screws from the untapped holes.

8. Assemble the copier.

NOTE: During re-assembly, make sure the oil end sensor holder is correctly positioned in the sensor grove.

6-8 HOT ROLLER STRIPPER REPLACEMENT

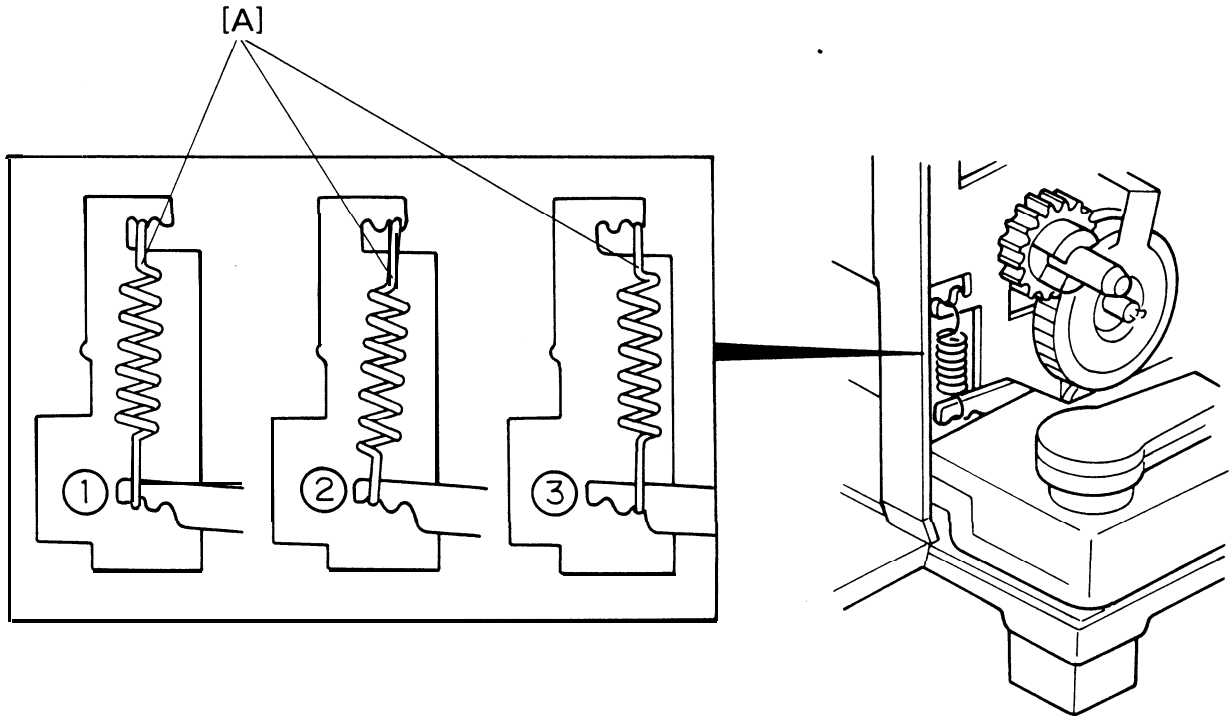


1. **Open the exit cover and unhook** the hot roller stripper springs [A] **and remove the strippers [B].**

2. **Replace the strippers and fit the springs.**

NOTE: It **is advisable to replace the strippers as a** set.

6-9 FUSING PRESSURE ADJUSTMENT



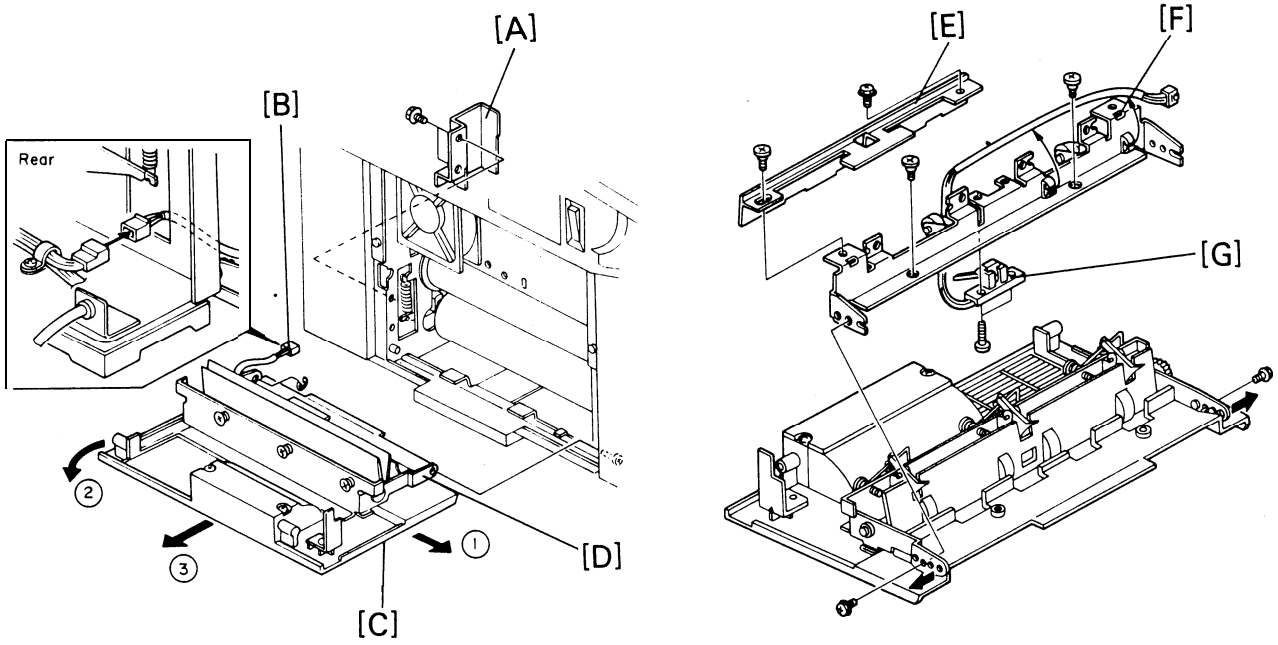
1. Open the exit cover.

2. Move the pressure springs [A] to the desired position as in the table below:

Setting	Fusing Pressure	
1	12.48 kg	← factory setting
2	16.88 kg	
3	18.28 kg.	

NOTE: Make sure the front and rear pressure springs are in the same position.

6-10 PAPER EXIT SENSOR REPLACEMENT



1. Turn off the main switch and unplug the copier.

2. Remove the following covers:

   a) rear cover (2 screws)
   b) lock plate cover (1 screw)
   c) left cover (4 screws).

3. Remove the connector-stopper bracket [A] (2 screws) and disconnect the exit sensor connector [B].

4. Remove the exit assembly [C] (1 "E" ring) by pushing the right exit bracket arm [D] inwards.

5. Remove the lower exit guide [E] (1 screw, 1 shoulder screw).

6. Remove the exit sensor bracket [F] (2 screws, 2 shoulder screws).

7. Replace the exit sensor **[G] (1 screw, 2** wire clamps).

8. Reassemble all parts.

NOTE: When re-installing the exit sensor bracket, make sure the positioning pins on the exit bracket are correctly fixed.

7. CORONA

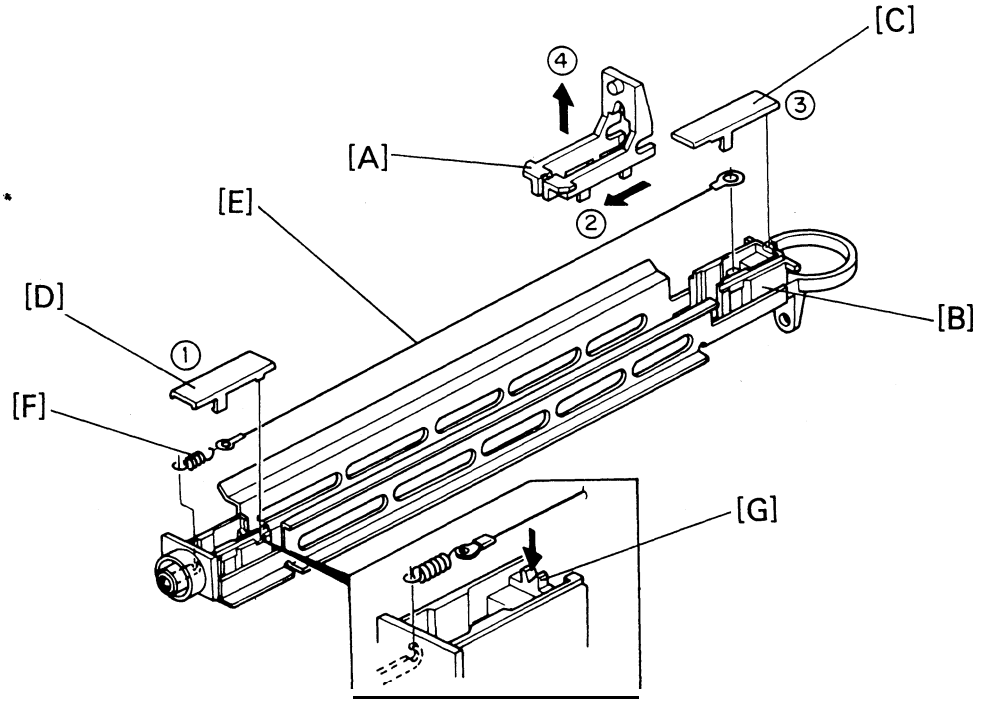
7-1 CORONA WIRE REPLACEMENT

Do not handle new corona wires with your bare hands. Oil on the wire will cause uneven charge on the drum.

Do not rub the corona wires with rough material (sandpaper, etc.) because the corona wires are carbon-coated.

Do not use any solvent to clean the wire as it will cause uneven charge on the drum.

When removing the endblock covers, be careful not to break off the side hooks.



I. Charge Corona Wire.

1. **Slide the wire cleaner** [A] away from the end block [B],

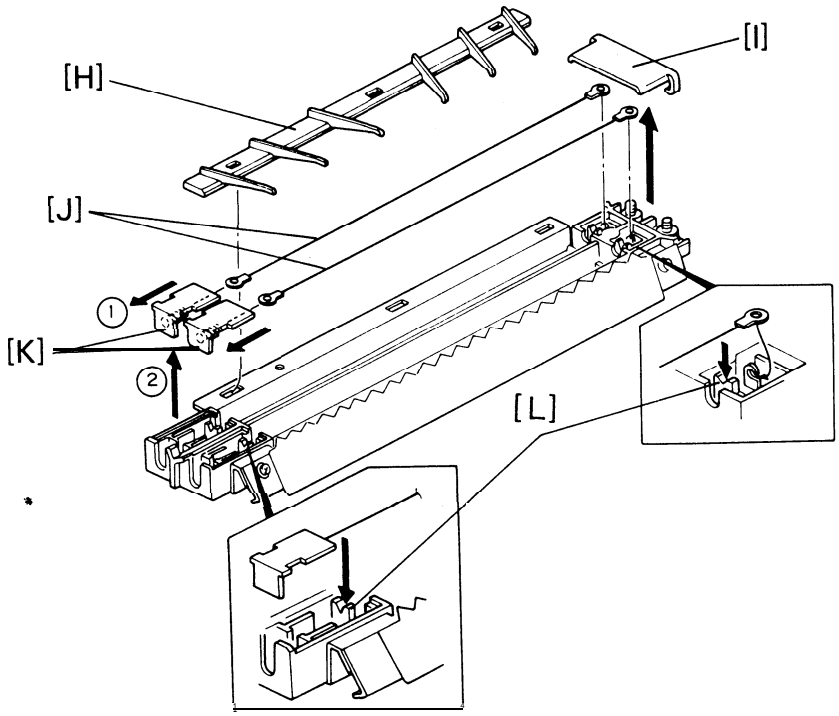
2. Remove the front [C] and rear [D] **end block covers.**

3. Slide the wire cleaner back to the front end block and remove it (by rotating it backwards and then lifting it upwards).

4. Remove **the** corona wire [E] from the front end block first.

5. Hook the tension spring [F] on to the new wire and install making sure that the wire is correctly positioned in the "V" slot [G].

6. Reassemble the wire cleaner, and then the end block covers.



11. **T/S Corona Wires.**

1. Remove the corona paper guide [H] by pressing the stopper and pulling it towards **the** rear.

2. Remove **the** rear **end block cover [1].**

3. Remove the corona wires [J] by pulling the front end blocks [K] towards **the** front and lifting upwards. (See illustration.)

4. Replace the corona wires, making sure they are correctly positioned in the "V" slots [L].

NOTE: Take care not to damage the transfer entrance mylar during this procedure.

7-2 DRUM CURRENT ADJUSTMENT

NOTE: a) The drum currents vary with environmental conditions such as humidity and atmospheric pressure. Generally it is not necessary to adjust the drum currents because they have already been adjusted for a range of environments at the factory.

b) Drum current adjustment may be required when there are problems with paper separation, incomplete toner transfer, and/or image density.

c) Make sure that the main switch is turned off when you change the range on the digital multimeter. If it is not, the multimeter may be damaged.

I. Preparation

1. Turn off the main switch and remove the following parts:

a) development unit
b) charge corona unit
c) drum stay
d) cleaning unit
e) drum flange
f) drum
9) drum guide
h) T/S corona unit.

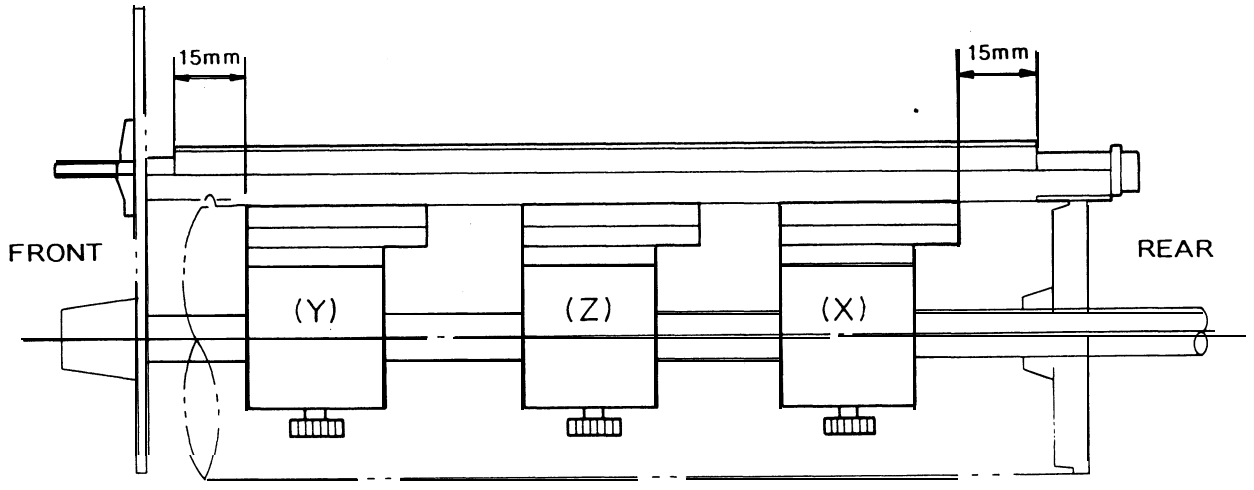
2. Clean or replace each corona wire, and clean the corona units and the cleaning unit.

3. Actuate the door switch.

4. Remove the rear cover (2 screws).

5. Turn on DPS 101-5 (Test Mode) on the main PCB.

NOTE: The fusing unit does not warm up when in Test Mode.



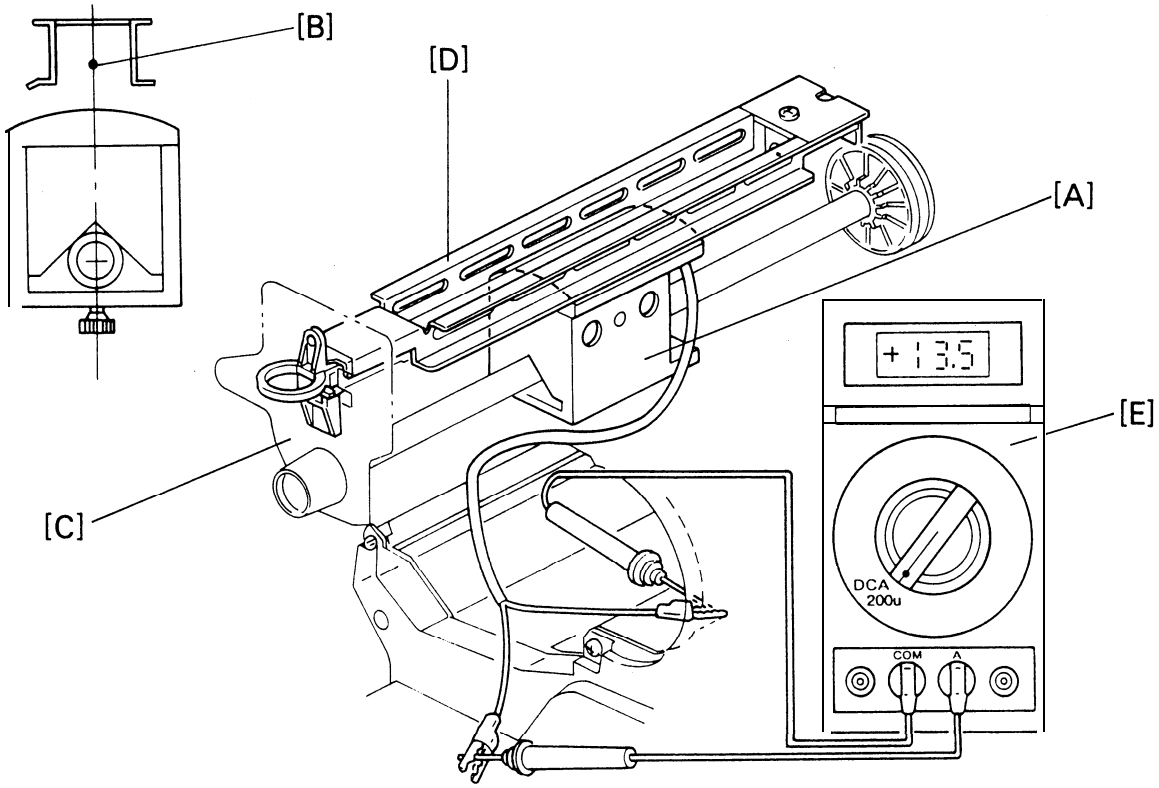
6. **Install the drum shoe and adapter on the drum shaft with the lip to the rear.**

7. **Route the shoe lead wires out through the development unit opening.**

8. **Connect the drum shoe and the digital multimeter leads as shown:**

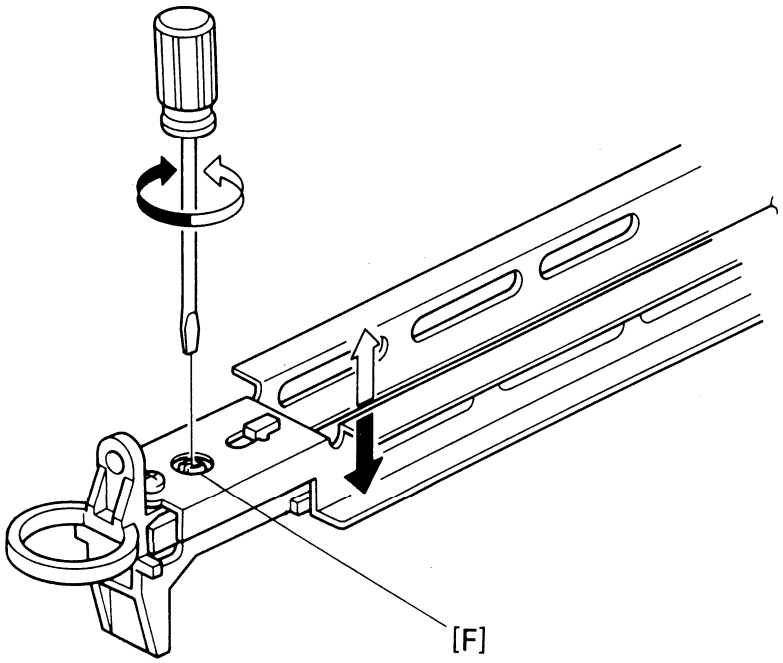
   a) Positive lead to the red lead clip.
   b) Negative lead and the black lead clip to the machine ground.

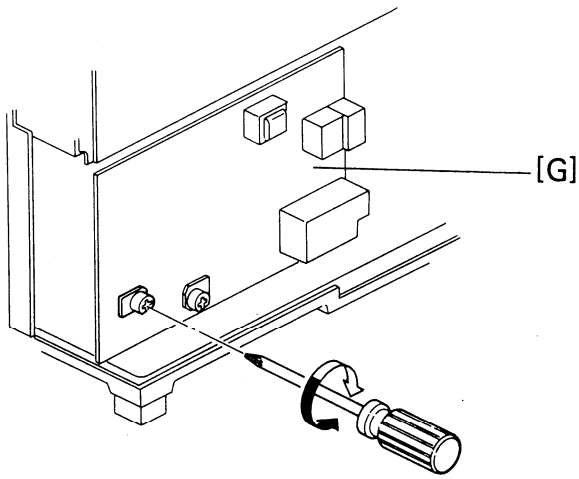
IL Charge Corona



OPTIMUM ADJUSTING VALUE: DC +13.5 ±0.2 μA

1. Disconnect CN2 (2p) on the CTB power pack.
2. Slide the drum shoe [A] to its rear limit as shown (X).
3. Position the drum shoe so that the axis of shoe is aligned with the charge corona wire [B] as shown.
4. Re-install the drum stay [C] (1 screw, 1 knob) and the charge corona unit [D].
5. Select the DCA 200 μ range on the digital multimeter [E].
6. Turn on the main switch, press the 10 key "18", and press the "Start" key.
7. Note the reading, and then **press the** "C/S" key.
8. Move the **drum shoe to the front as** shown $(Y)_j$ and repeat steps 4 **to** 7.





9. Adjust the front corona wire height adjusting screw [F] if the two readings differ. The difference between front and rear should not be more than 0.2 WA.

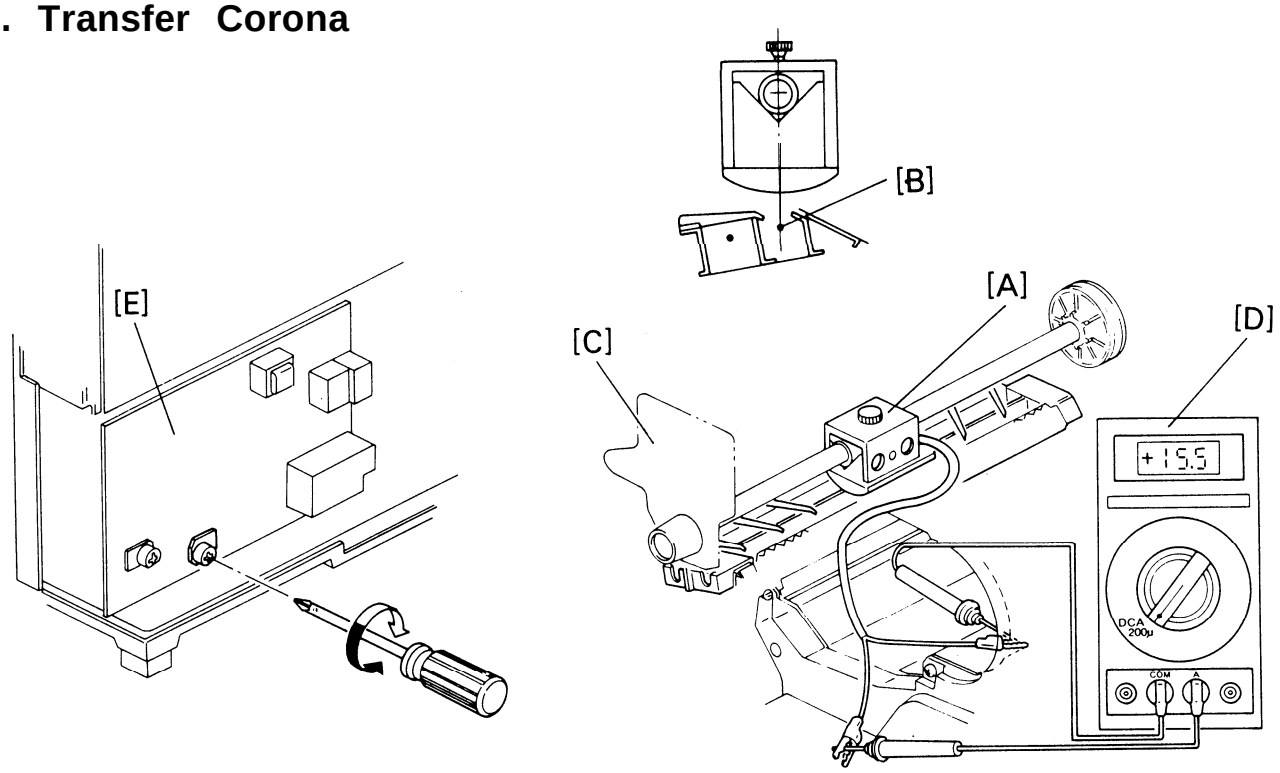
NOTE: **After adjusting the front side, confirm the rear reading once** again.

10. Position the drum shoe on the center of the shaft (Z).

11. Press the 10 key "18", press the "Start" key, and adjust the charge corona current by turning "VRC" on the CTB power pack [G].

12. Press the "C/S" key, turn off the main switch, and turn off the DPS101 -5.

III. Transfer Corona



OPTIMUM ADJUSTING VALUE: DC +15.5 ±0.4 μA

1. Re-install the T/S corona unit and position the drum shoe [A] on the **center** of the shaft, so that the axis of the shoe is aligned with the transfer corona wire [B] as shown.

2. Re-install the drum stay [C] (1 screw, 1 knob).

3. Select the DCA 200 μ range on the digital multimeter [D]

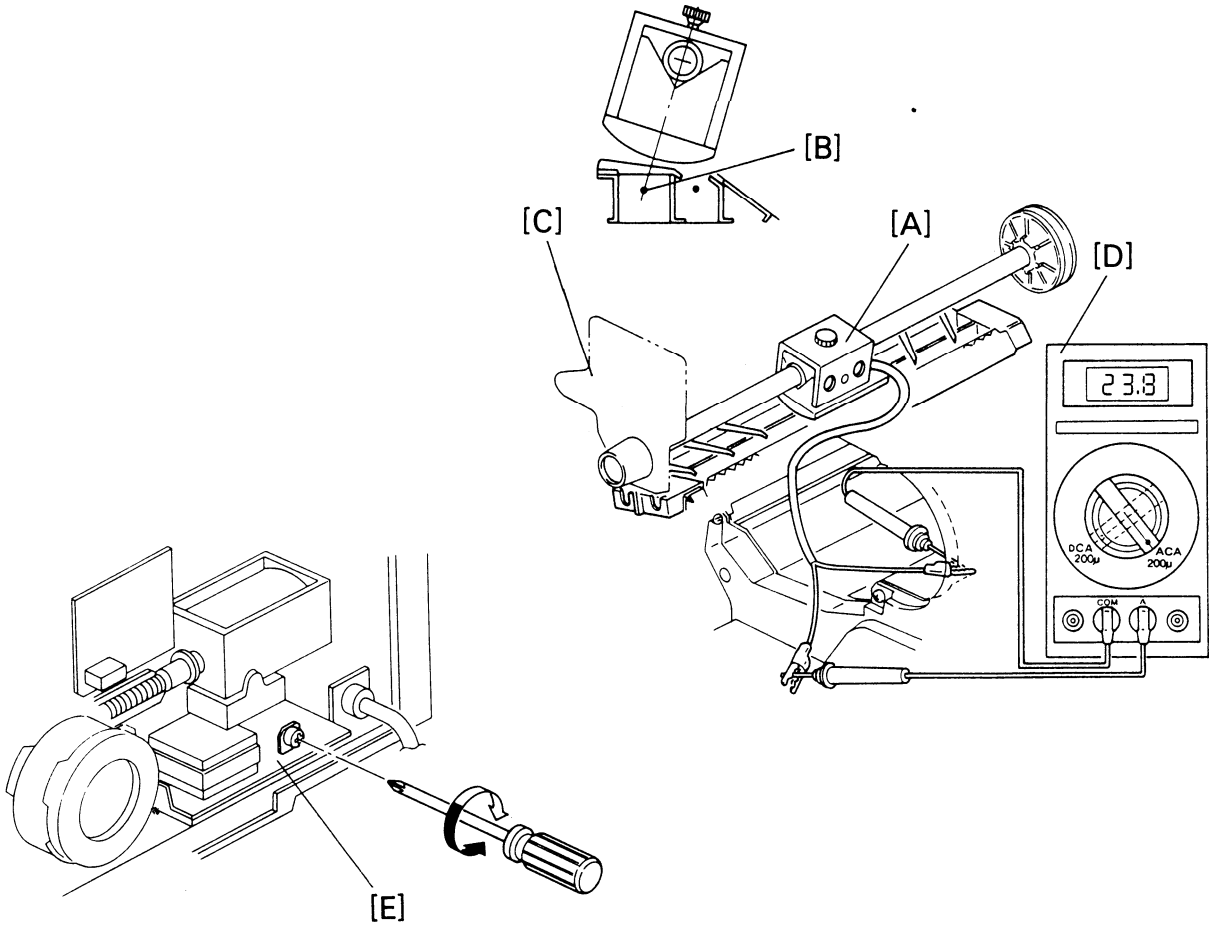
4. Turn on DPS101 -5 (Test Mode) on the main PCB.

5. Turn on the main switch and press 10 key "4", and press the "Start" key. Note the reading.

69 Adjust the transfer corona current by turning "VRT" on the CTB power pack [E].

7. Press the "C/S" key, turn off the main switch, and turn **off** DPS101-5.

IV. Separation Corona



OPTIMUM ADJUSTING VALUE: AC 23.8 ±1.5 μA
(DC -1.4 ±0.2 μA)

1. **Position the drum shoe [A]** on the center of the shaft so that the axis of the shoe is aligned with the separation corona wire [B] as shown.

2. Re-install the drum stay [C] (1 screw, 1 knob), and return the T/S **corona** unit to its original position.

3. Turn on **DPS101-5 (Test Mode) on** the **main PCB.**

4. Select the ACA 200 ± range on the digital multimeter [D].

5. Turn on the main switch, press the 10 key "5", and press **the "Start" key.** Note the reading. (Wait 30 **seconds for the corona current to stabilize.)**

6. **Adjust** the AC **separation corona current by turning "VRI" on the** separation power pack **[E].**

7. Press the “C/S” key and turn off the main switch.

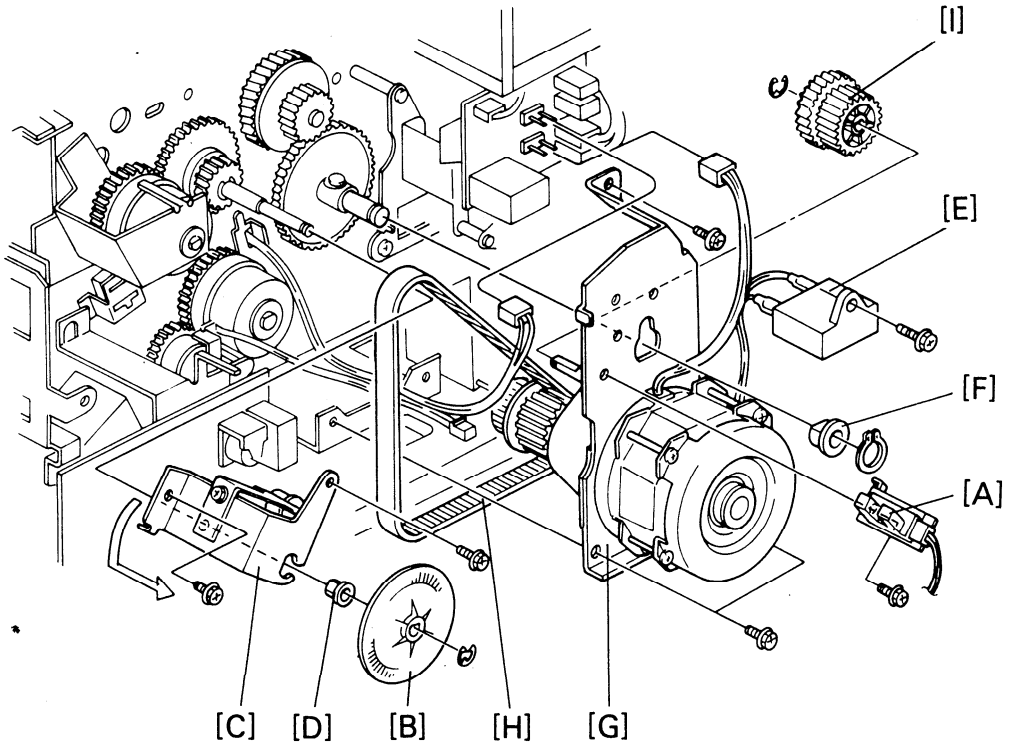
8. Select the DCA 200 μ range on the digital multimeter, turn on the main switch, press the 10 key “5”, and press “Start”. Confirm the reading is within specifications, however it is not adjustable. ”

9. Press the “C/S” key, turn **off** the main switch and turn off DPS 101-5.

NOTE: Even if the dc current is out of specification, no problems concern-**ing copy image and/or** paper separation should occur.

8. OTHERS

8-1 TIMING BELT REPLACEMENT

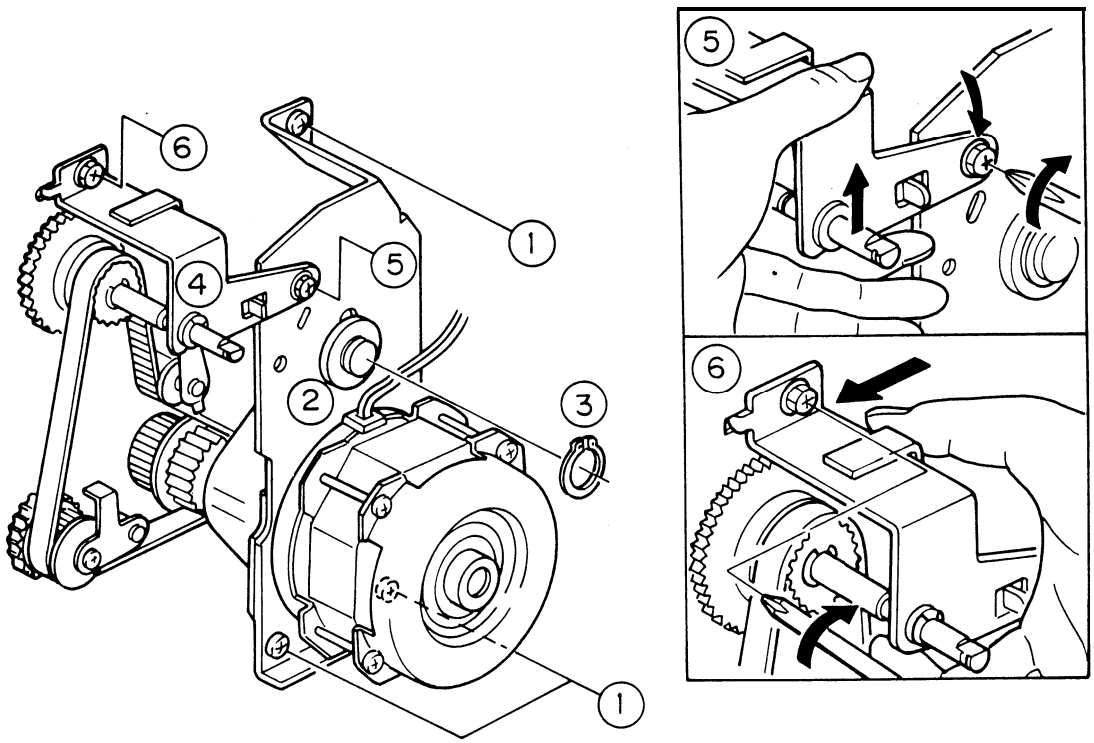


1. Turn off the main switch and unplug the copier.

2. Remove the following parts:

a) development unit
b) charge corona **unit**
c) drum stay
d) drum flange
e) drum
f) main PCB (see 1-6 Reverse Clutch Damper Replacement).

3. Remove the paper feed solenoid (see 4-1 Pre-Transfer Lamp Replacement) (2 screws), and disconnect CN2 (2p) on the CTB power pack and CN604 (2p) on the AC drive PCB.



4. Remove the pulse generator sensor assembly [A] (1 screw, 1 connector) and the pulse generator disk [B] (1 “E” ring).

5. Remove the timing belt tension bracket [C] together with the bushing [D] (2 Screws).

6. Remove the main motor capacitor [E] (1 screw).

7. Remove the drum shaft bushing [F] (1 “C” ring).

8. Remove the main motor assembly [G] (3 screws, 1 connector) together with the timing belt [H].

9. Remove the drum drive gear [1] (1 “E” ring) and replace the timing belt.

10. Re-install all parts.

NOTE: a) Make sure the PTL and registration clutch harnesses are fed through the timing belt.

b) For easy installation of the timing belt tension bracket, see the illustration above.

c) Check that the timing belt is correctly positioned over the pulleys.

d) The fixing screw of the main motor capacitor is longer than the other fixing screws.

9. COPY IMAGE

9-1 LIGHT INTENSITY ADJUSTMENT

NOTE: Original ID sensor adjustment must be made after making the light intensity adjustment.

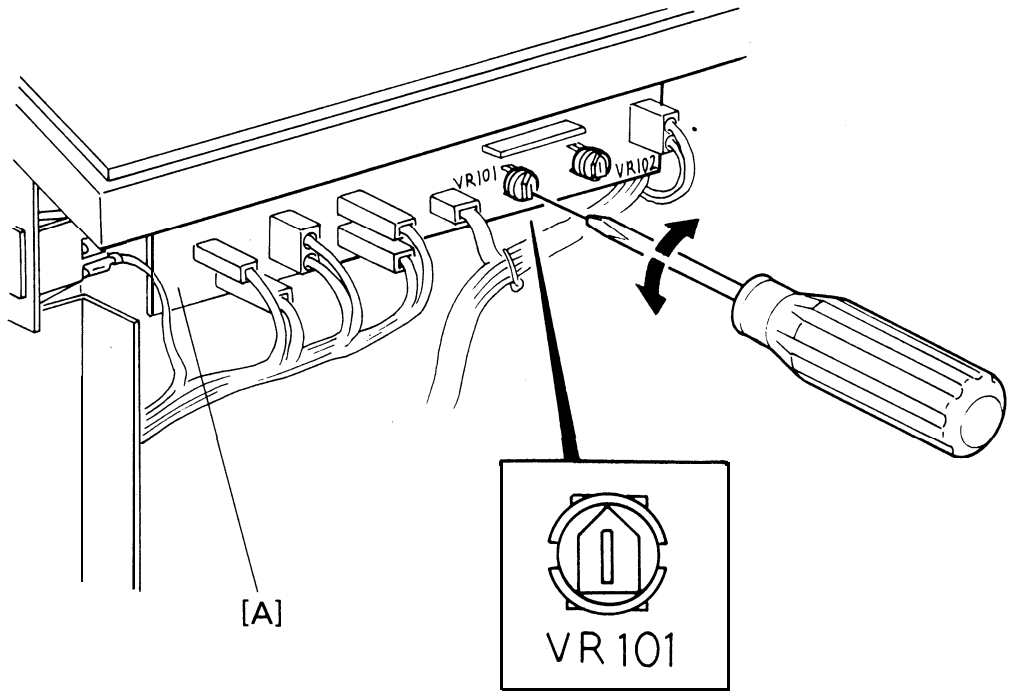
ADJUSTMENT STANDARD: Level 2 of the grey scale on the OS-A4 chart should be just visible on the copy, when the no.2 position (second notch from the darkest side) of the manual density control is selected.

1. Clean the optics.

2. Turn on the main switch.

3. **Set** the image density level at the No. 2 position and make a few copies of the OS-A4 test chart [A].

4. Confirm that the level 2 of the grey scale is just visible. If the image **density is not correct, proceed to steps** 5 to 10.



5. Open the front cover and remove the left inner cover (3 screws).

6. Adjust VR101 on the lamp control PCB [A], to achieve correctly illuminated copies.

7. Close the front cover and make test copies.

8. Confirm that the image density is within the standard.

NOTE: Check and adjust the light intensity at every visit.

9. Turn off the main switch and reassemble.

9-2 ORIGINAL IMAGE DENSITY SENSOR ADJUSTMENT

ADJUSTMENT STANDARD: 2.5 V ±0.I V (7F t5)

PREPARATION:

1. Turn off the main switch.

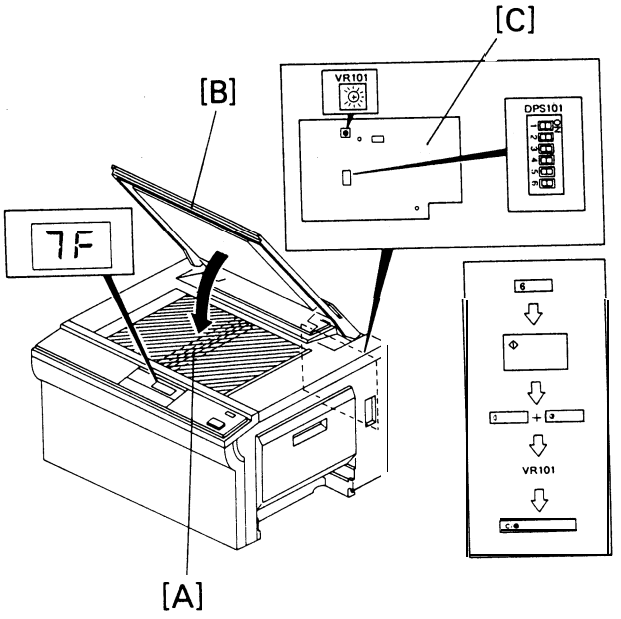
2. Move the 1st scanner [A] to the central area of the optics unit by removing the exposure glass and sliding the scanner rod to the right. Re-install the exposure glass.

3. Place 3 white sheets of paper on the exposure glass and close the platen cover [B].

4. Remove the rear cover and turn on DPS 101-5 (Test Mode) on the main PCB [C].

5. Turn on the main switch.

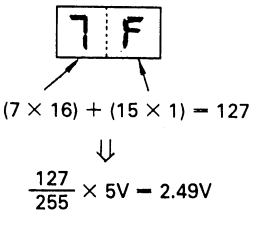
METHOD A: Reading from the **CPU**



SPECIFICATION								2.5 ± 0.1V 7A ~ B4							
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

[How to Calculate] $\boxed{x \mid y} \Rightarrow \frac{16x + y}{255} \times 5V$

- Example



6. press 1() key "6" and then the "Start" key to turn on the exposure lamp.

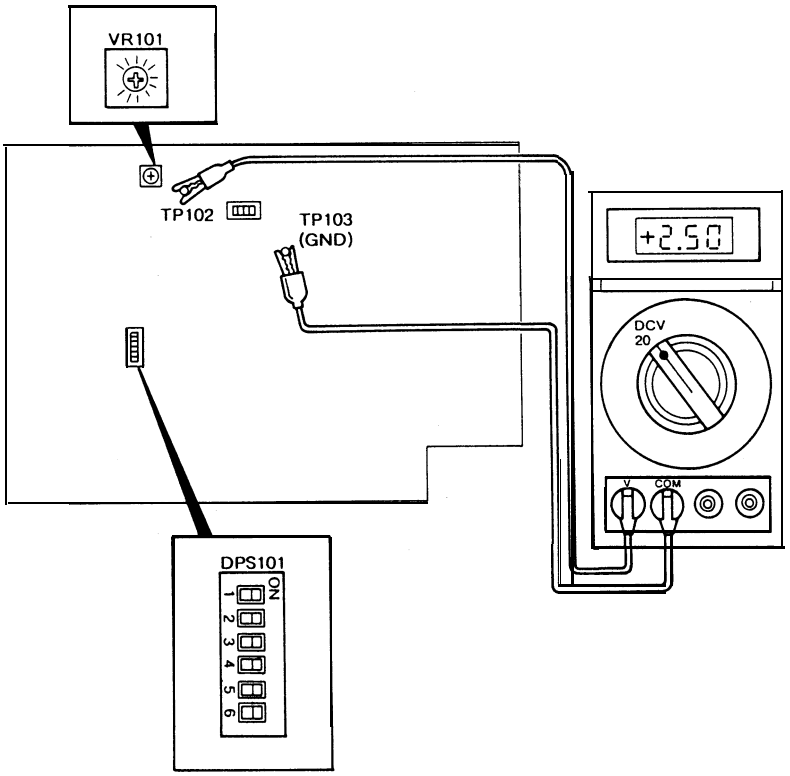
7. While pressing the Auto ID key, press the manual image density "Lighter" key, and the original image density sensor adjustment voltage will be **displayed on the operation panel** in Hex code.

8. If the voltage is incorrect, adjust VR101 on the main PCB in order to obtain the correct amount.

9. Press the “C/S” key, turn off the main switch and DPS 101-5.

NOTE: The exposure lamp has a safety shut-off after being on for 20 seconds.

METHOD B: Reading from a Digital Multimeter

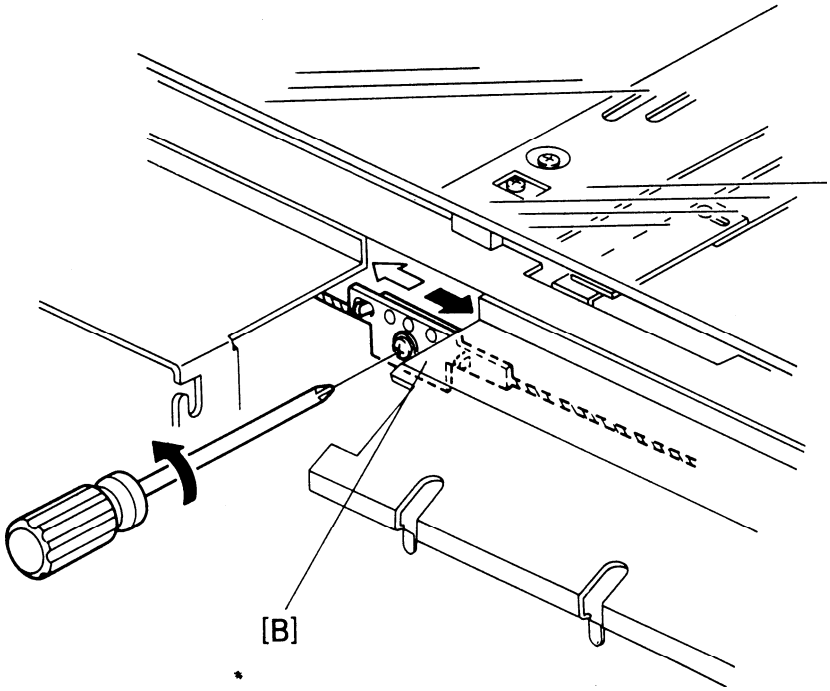


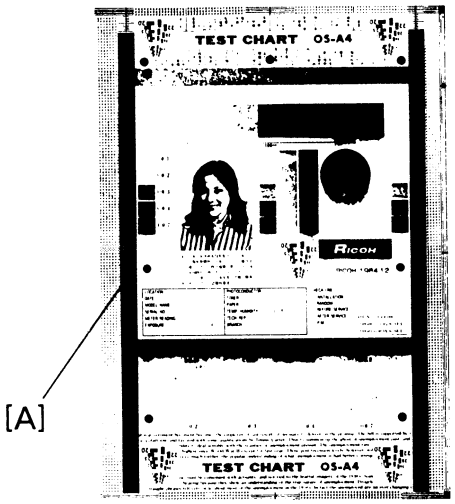
10. Hook up the multimeter leads as follows:

    a) positive lead to TPI 02
    b) negative lead to TPI03 (GND).

11. Repeat procedures 6 to 9, noting the reading in the multimeter.

9-3 HORIZONTAL MAGNIFICATION ADJUSTMENT





ADJUSTMENT STANDARD: ±0.5%

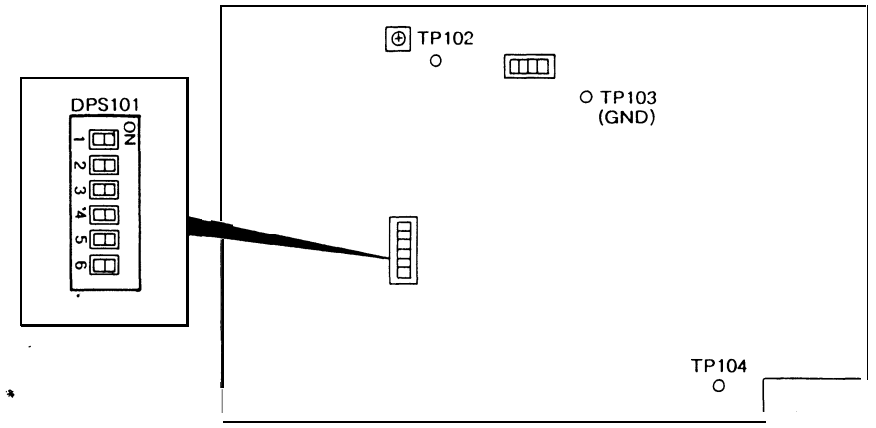
1. Make **a few copies using an** OS-A4 **test chart** [A] **as the original** and **check the horizontal magnification.**

2. **If the magnification is out of specification, adjust it in the following manner:**

   a) **Remove the rear and upper covers.**
   b) **Move the 1st scanner so** that the wire clamp [B] is accessible **between the main** PCB and the optics cooling fan assembly.
   c) **Loosen the wire clamp (1 screw).**
   d) **Move the 1st scanner to the right** to enlarge the copy image, or to **the left to reduce it** (as viewed from the rear of the copier).
   e) **Tighten the wire clamp screw and** check the magnification again,

9-4 REGISTRATION TIMING ADJUSTMENT

NO.	LEADING EDGE									REGISTRATION							
1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1
3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	1
4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	1
- ← 1.2mm / step adjustment → +																	



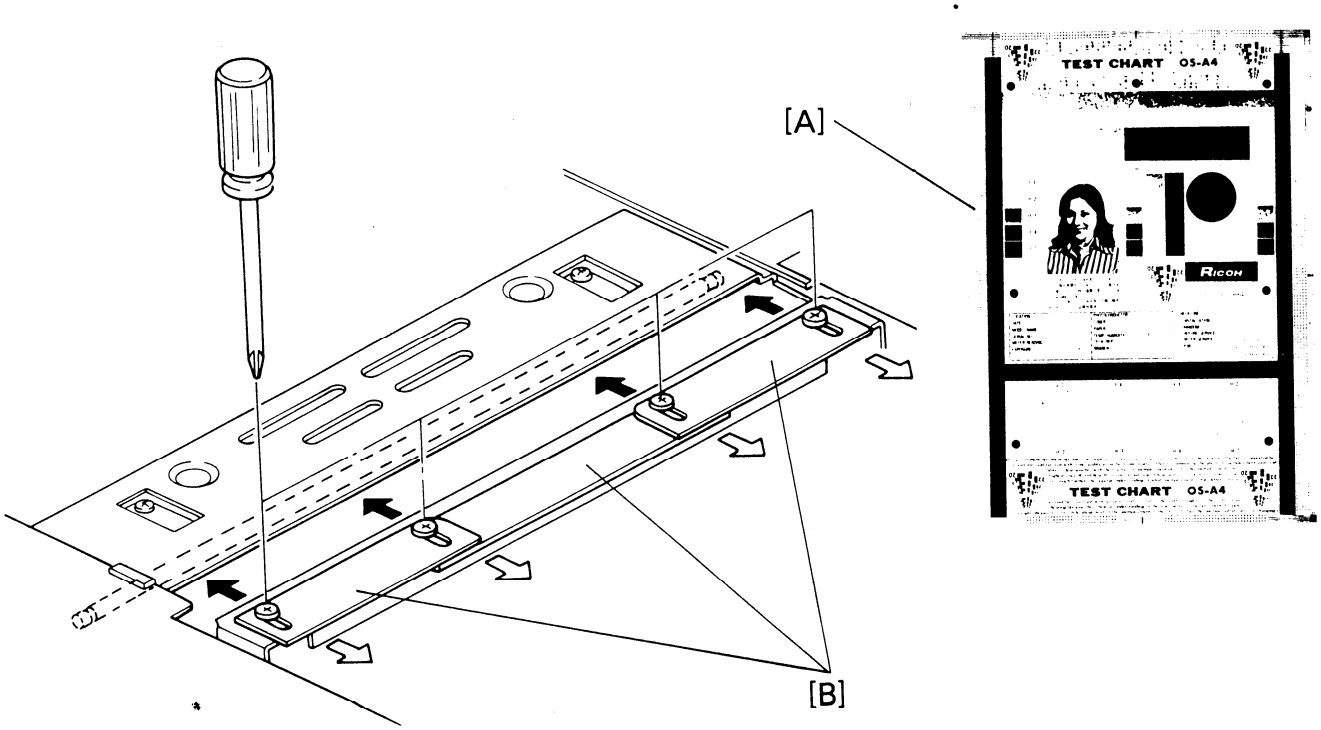
ADJUSTMENT STANDARD: 0 ±2 mm

1. Place a scale graduated in millimeters on the exposure glass, aligning it **with** the left scale.

2. Make 3 copies with the no.7 position of the manual image density control selected.

3. Adjust the registration timing using the DPS 101-1, -2, -3, and -4 on the main PCB as per the above table.

9-5 UNEVEN IMAGE DENSITY ADJUSTMENT (Uneven exposure)



NOTE: The exposure lamp position adjustment should be made before this procedure.

ADJUSTMENT STANDARD: The side to side variation of the grey scales should be less than 1 level.

1. Make a few copies using an OS-A4 test chart [A].

2. Remove the exposure glass and move the adjusting plates [B] in order to balance the uneven exposure.

3. Check the uneven exposure again,

SECTION 4

TROUBLESHOOTING

TROUBLESHOOTING

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1. COPY QUALITY

1-1 WHITE SPOTS

1. FIREFLY SPOTS

- Possible Causes -

. Developer too old

- Insufficient toner in the developer
- Dirty seals around the development unit

- Action -

Is there a small black spot in the center of the white spot?

Y N

Check and adjust the doctor gap **(0.72** mm).

Is the image density too light?

Y N

- Clean the ends of the development roller.
- Replace the developer and the side seals.

Correct the light copy condition. (Refer to “Light Copy” section.)

2. SMALL SPOTS

- Possible Causes -

. Dirty corona wires

. Incorrect corona currents

- Action -

Is the charge corona current correct?

Y N

↓

Adjust the charge corona current.

↓

Clean the transfer corona wire and adjust the transfer current.

1-2 HAT IMAGE

- Possible Causes -

- Defective quenching lamp
- Charge corona wire miscounted
- Incorrect corona current
- Old developer

- Action -

Does the quenching lamp turn on?

Y N

N → Is power applied between CN604-1 and CN604-2 on the AC drive PCB?

Y N

N → Replace the AC drive PCB.

Y → Replace the quenching lamp.

Is the charge corona wire properly installed?

Y N

N →
- Install the charge corona wire correctly.
- Replace any defective parts.

Y →

Is the charge corona current correct?

Y N

N → Adjust the charge corona current?

Y →

Replace the developer.

1-3 BLANK AREA OR PATCHY IMAGE

- Possible Causes -

- Dirty PTL, transfer or separation coronas.

- Action -

Are the transfer and separation corona wires improperly installed?

Y N

N: Clean the PTL, transfer and separation corona wires and adjust the corona currents.

Y: Clean and reset the wire(s).

1-4 HOLLOWING OUT

CENTER OF **SOLID BLACK AREAS IS** HOLLOW

- Possible Causes -

. Damp paper

. Incorrect transfer or separation corona current.

- Action -

Is the paper damp?

Y N

N:
- Clean the PTL and T/S corona wires.
- Check and adjust the transfer and separation corona currents.

Y: Replace the damp paper with fresh paper.

1-5 VERTICAL WHITE LINES OR BANDS

1. LINES 78 mm APART

- Possible Causes -

- Damaged pick-off pawls
- Pick-off mechanism malfunction

- Action -

Does the pick-off pawl mechanism work correctly?

Y N

N → Correct or replace any defective parts.

Y →

Are the pick-off pawls damaged?

Y N

N → Replace the drum.

Y →

Correct 6r replace the pick-off pawls, and replace the drum.

2. STRAIGHT SHARP LINES

- Possible Causes -

- Drum scratched
- Cleaning blade damaged
- Cleaning brush worn
- Hot roller scratched
- Hot roller strippers worn out

- Action -

Start a copy cycle and stop it before the copy reaches the fusing unit. Do the same lines exist on the unfused copy?

Y N

If the surface of the hot roller is scratched, which part is scratching the hot roller surface?

- Oil Blade
- Hot Roller Strippers
- Other

Clean, correct, and/or replace any parts which scratch the hot roller. If the hot roller strippers are badly stained with toner, check the fusing temperature and replace the fusing thermistor or the main PCB. Then, replace the hot roller.

Is the drum scratched?

Y N

Follow troubleshooting section "UNEVEN DENSITY 2. UNEVEN DENSITY APPEARS IN BANDS."

Correct or replace any parts scratching the drum surface:

- Cleaning entrance seal--wavy, bent, burrs
- Cleaning brush
- Brush seals which contacts the drum.

Are there any foreign substances around the drum that may cause leaking of the drum potential?

Y N

- Clean the edge of the cleaning blade.
- Clean all seals.

Remove the foreiqn substances.

3. FUZZY LINES OR BANDS

- Possible Causes -

. Dirty corona wire

. Dirty brush seals

· Action -

Clean the charge and transfer corona wires.

Clean all brush seals that contact the drum.

If the drum is brand-new, make "Free Run" for about **two** minutes to condition the drum.

1-6 UNEVEN DENSITY

1. IMAGE DENSITY GRADUALLY CHANGES ACROSS THE COPY

- Possible Causes -

- Charge corona wire height not even
- Charge corona wire dirty
- Doctor gap not even

- Action -

Are any of the optics parts dirty?

- Toner Shield Glass
- Exposure Glass
- Mirrors, Lens, Reflectors

Y: Clean them. If the problem is still not solved, do the following:

N: Is the exposure lamp stained black?

Y: Replace the exposure lamp.

N: Correct uneven exposure using the adjusting plates.

Clean the charge corona wire. Is the charge corona wire incorrectly positioned in the wire cleaner and end block?

Y: Position the wire correctly.
If the problem still exists, check and adjust the doctor gap.

N: Is the charge corona current uneven across the drum?

Y: Adjust the charge corona current and wire height.

N: Clean the transfer corona unit.

2. UNEVEN DENSITY APPEARS IN BANDS.

- Possible Causes -

. Exposure lamp misaligned

. **Dirty quenching lamp**

. **Dirty corona wire**

. **Incorrect corona current**

- Action -

Are any of the following parts stained or dirty?

- ◆ Toner Shield Glass
- ◆ Exposure Glass
- ◆ Mirrors, Lens, Reflectors

Y **N** ↓

Is the exposure lamp stained?

Y **N** ↓

Correct using the adjusting plates. **Does the** problem still exist?

Y ↓

Align the filament of the exposure lamp.

↓

Replace the exposure lamp.

Clean them. **If the problem is still not** solved, do the following:

- ◆ Clean the charge corona wire.
- ◆ Check and adjust the charge corona current. Make sure it is even across the drum.
- ◆ Clean the quenching lamp.
- ◆ Clean the transfer corona wire.

1-7 ABNORMAL IMAGE DENSITY

IMAGE DENSITY IS TOO HIGH OR TOO LOW

- Possible Causes -

- Incorrect charge corona current
- ID sensor malfunction

- Action -

Check the output voltage of the ID sensor. Is the voltage correct?

Y

N

Adjust the voltage so that it is within specifications.

Check and adjust the charge corona current.

If the image density is too light, use serviceman mode (toner feed mode) to supply toner.

1-8 VERTICAL BLACK LINES OR BANDS

1. DOTTED LINES OR BANDS

- Possible Causes -

- Pick-off pawl mechanism malfunction
- **Scratched drum**

- Action -

Do the pick-off pawls swing properly?

Y ↓

N → **Correct or replace the pick-off pawls, and replace the drum.**

Is the gap between the drum and pick-off pawls incorrect (1 to 2 mm)?

Y ↓

N →
- If the pick-off paw! mechanism does not work properly, correct or replace any defective parts.
- If the drum is scratched, correct the part(s) that caused the **scratch; then, replace the drum.**

Adjust the gap, and replace the drum.

2. LINE OR BAND APPEARS ON THE REAR EDGE OF THE COPY

- Possible Cause -

- Toner shield glass miscounted

- Action -

Set the toner shield glass properly.

3. STRAIGHT LINES OR BANDS

- Possible Causes -

- Hot roller scratched
- Insufficient silicone oil
- Cleaning blade damaged
- Drum scratched
- Dust between the cleaning blade and drum
- Edge of the cleaning blade deformed
- Insufficient cleaning pressure
- Cleaning mechanism not working properly

- Action -

Start a copy cycle and stop it just before the paper reaches the fusing unit. Then, check if the unfused copy has the same lines on it?

Y

N

If the hot roller surface is scratched, clean, correct, or replace any parts scratching the surface?

- Oil Blade
- Hot Roller Strippers
- Others

Note: If the hot roller strippers are badly stained by toner, check the fusing temperature and replace the fusing thermistor or the main PCB. Replace the hot roller.

Is the drum scratched?

Y

N

Clean the edge of the cleaning blade. Do the lines still exist or do they reappear after a short time?

Y

Is the cleaning solenoid correctly positioned?

Y

N

Adjust the position of the cleaning solenoid.

Check the cleaning pressure mechanism. Do all parts move properly?

Y N

Correct or replace any defective parts and check their operation again.

Is the edge of the cleaning blade deformed?

Y N

Slightly increase the cleaning pressure.

Replace the cleaning blade.

Determine what scratched the drum and correct it (perhaps the pick-off Pawls), and replace **the** drum.

1-9 **BLACK SPOTS**

1. AT THE LEADING EDGE

- Possible Cause -

- Separation corona wire miscounted
- Incorrect transfer corona current

- Action -

Is the separation corona wire properly installed?

Y N

N → Reset the transfer corona wire and clean the separation corona wire and T/S corona unit.

Y → If the separation corona current is incorrect, clean the separation corona wire and adjust the separation corona current.

2. AT UNSPECIFIED PLACES

- Possible Cause -

- Toner falling from the cleaning unit

- Action -

Check that the seals are not damaged and that the toner sweeping bar turns correctly.

1-10 DIRTY BACKGROUND ON ENTIRE COPY IMAGE

- Possible Causes -

- Incorrect exposure lamp output
- Inefficient drum cleaning
- Development bias malfunction
- Toner supply clutch malfunction
- Incorrect corona current
- Doctor gap too large
- Quenching lamp open
- Dirty optics

- Action -

Clean the optics and the quenching lamp. Confirm that the quenching lamp is on while copying.

Is the dirty background reduced if more cleaning pressure is provided by re-positioning the cleaning solenoid?

N Y

Y: Replace the cleaning blade.

N:

Is the toner supply roller gear always turning while copying?

N Y

Y:

Is CNI 11-1 always low?

N Y

Y: Replace the main PCB.

N: Clean the contact surfaces of the toner supply clutch or replace the clutch.

Is appropriate development bias being applied?

Y N

- Check that the development roller shaft contacts the bias plate at the rear of the machine.
- Replace the CTB power pack or the main PCB.

Is the doctor gap correct?

Y

N

Adjust the doctor gap.

Are both the charge and the transfer corona currents within specifications?

Y

N

Adjust the currents.

Adjust the light intensity of the exposure lamp.

Note: If this problem occurs only in the auto **ID** mode, check and adjust the original ID **sensor.**

1-11 BLANK COPY

- Possible Causes -

- **Charge corona wire miscounted or broken .**
- Defective CTB power pack
- Defective main PCB

- Action -

Is there a faint image?

Y

N

Is the charge corona wire (or unit) incorrectly installed?

Y

N

Does the main PCB output the correct charge trigger signal to the CTB power pack (CN114-3 drops from +24 volts to ground)?

Y

N

1

Replace the main PCB.

- Clean the charge corona unit **and** remove any foreign substances that might cause a leak.
- If the problem still exists, replace the CTB charge power pack.

Reset the charge corona wire (or unit).

Does the density gradually drop when making copies?

Y

N

Is the transfer corona wire (unit) incorrectly installed?

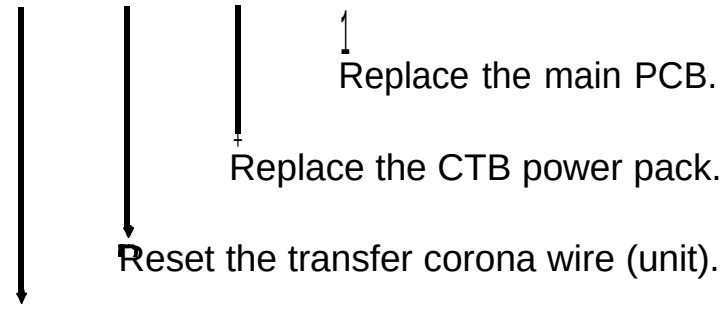
Y

N

Does the main PCB outpui the proper transfer trigger signals **(CNI** 14-2 drops from +24 volts to ground)?

Y

N


Replace the main PCB.
Replace the CTB power pack.
Reset the transfer corona wire (unit).
Check the development drive mechanism and clean or replace any defective parts.

1-12 **LIGHT COPY**

- Possible Causes -

- Incorrect exposure lamp output
- Development bias malfunction
- Incorrect corona currents
- Narrow doctor gap

- Action -

Is appropriate development bias being applied?
Y N
↓ ↓
Replace the CTB power pack or the main PCB.

Is the doctor gap correct?
Y N
↓ ↓
Adjust the doctor gap.

Are both the charge and the transfer corona currents within specifications?
Y N
↓ ↓
Adjust the currents.

Adjust the light intensity of the exposure lamp.

Note: If this problem occurs only in the auto ID mode, check and adjust the original ID sensor.

1-13 UNFUSED COPY

IMAGE CAN **BE EASILY RUBBED** OFF

Possible Causes -

- Thermistor malfunction
- Very low early morning temperatures.
- Copy paper has a very rough surface.

Action -

Does the problem occur only early in the morning?

Y

N

Is the thermistor damaged?

Y

N

increase the fusing pressure.

Replace the thermistor.

Select the warm-up idle mode using DPS 102-4.

1-14 **JITTER**

- Possible Causes -

- Vibration in the drive mechanism
- Scanner not moving smoothly
- Reverse clutch damper damaged

- Action -

Does jitter appear around 40 mm from the trailing edge?
(Around 20 mm from the trailing edge on 81/2' x 11″ copying.)

N ↓ / Y ↓

Replace the reverse clutch damper.

Does jitter appear on the leading edge of copies?

N ↓ / Y ↓

Clean the scanner guide rod: then, apply a small amount of Launa oil to the lubricant pad (if dry).

Is the scanner wire tension correct?

Y ↓ / N ↓

Replace the tension spring together with the scanner drive wire.

Check all mechanical parts for incorrect operation.

2. SERVICE CALL CONDITIONS

2-1 E1 EXPOSURE

- Definition -
Lights if the input from the original ID sensor is less than 0.3 volt for approximately 1 second after the exposure lamp turns on.

- Possible Causes -

- Exposure lamp broken
- Original ID sensor broken
- Lamp control PCB defective
- Main PCB defective

- Action -
Does the exposure lamp turn on?

N Y

Y:
Is the voltage at CN102-6 on the main PCB less than 0.3 volt?

N Y

Y:
Replace the original ID sensor

N:
Replace the main PCB.

N:
Is the exposure lamp / optics thermoswitch open?

N Y

Y:
Replace the exposure lamp/optics thermoswitch.

N:
Does CNI14-4 drop from +24 to O volt when the "Start" key is pressed?

N Y

Y:
Replace the lamp control PCB.

N:
Replace the main PCB.

2-2 E2 SCANNER DRIVE

- Definition -

. Lights if the scanner home position sensor does not turn on within 10 seconds after the "Start" key is pressed.

. Lights if the scanner home position sensor does not turn off within 3 seconds after the scanner starts moving.

• Lights if the scanner home position sensor does not turn on within 2 seconds after the reverse clutch turns on.

- Possible Causes -

. Home position sensor failure

. Forward and/or reverse clutch failure

. Scanner drive wire out of position

• Main PCB defective.

- Action -

Does the scanner move?

N Y

Does the voltage at CN 104-5 change when actuating or de-actuating the scanner home position sensor?

N Y

Replace the main PCB.

Replace the scanner home position sensor.

Does the voltage at CN103-1 (for the forward clutch) /at CN103-3 (for the reverse clutch) drop from +24 volts to **O volt?**

N Y

Replace the main PCB.

Replace the forward clutch/reverse clutch.

2-3 E5 **FUSING**

- Definition -

- Lights if the hot roller temperature does not increase at least 2 degrees C within 10 seconds after the power is turned on.
- Lights if the hot roller temperature does not reach 140 degrees C within 75 seconds after the power is turned on.
- Lights if the hot roller temperature goes above 230 degrees C.

- Possible Causes -

- Fusing lamp burned out
- Thermoswitch open
- Thermistor open
- **Lamp control** PCB defective
- Main PCB defective.

- Action -

Does the fusing lamp turn on?

N

Y

Is the fusing thermistor open?

Y

N

Replace the main PCB.

Replace the fusing thermistor.

Is the fusing thermistor shorted?

N

Y

Replace the thermistor.

Is the fusing lamp/fusing thermoswitch open?

N

Y

Replace the fusing lamp/fusing thermoswitch.

Does CN114-6 drop from +24 volts to O volt when the power is turned on?

N

Y

Replace the lamp control PCB.

Replace the main PCB.

2-4 **E6 FUNCTIONAL DRIVE**

- Definition -

. Lights if the CPU receives no pulse from the pulse generator for a 0.7 second interval.

- Possible Causes -

- Timing belt broken or out of position
- Pulse generator sensor failure
- Main motor failure
- Main PCB defective.

- Action -

Does the main motor turn on?

Y

N

Is the main motor conductive?

N

Y

~Replace the main motor.

Does CN104-4 drop from +24 volts to O volt when "Start" is pressed?

Y

N

Replace the main PCB.

Replace the AC drive PCB.

Is the timing belt broken or out of position?

N

Y

Replace or reset the timing belt.

Are pulses observed at CN109-3 on the main PCB when the main motor is turning? (Approx. 1.8 volts with a digital multimeter.)

Y

N

Replace the pulse generator sensor.

Replace the main PCB.

2-5 E7 TONER OVERFLOW

- Definition -

- Lights if the **used toner in** the used toner tank actuates the toner overflow sensor.

- Possible Causes -

- Used toner tank is full of used toner
- Toner overflow sensor failure
- Main PCB defective.

- Action -

Is the used toner tank full of used toner?

N Y

Y: Dispose of the **used toner.**

Is the voltage at CN102-3 on the main PCB O volt when the toner overflow sensor is not actuated?

N Y

Y: Replace the main PCB.

Replace the toner overflow sensor.

2-6 IMAGE DENSITY INDICATOR

- Definition -

. Blinks if Vsg becomes less than 2.5 volts.

. Blinks if Vsp **becomes** more than 2.5 volts.

- Possible Causes -

. Dirty image **density** sensor

. Image density sensor failure

. Main PCB defective.

- Action -

Is the image density sensor dirty?

N Y

Y: Clean the image density sensor.

Is Vsg more than 2.5 volts?

Y N

N: Adjust Vsg to the specification (4.0 ±0.2 volts).
(If the problem still occurs.)

Replace the main PCB.

3. DEFECTIVE SENSOR/SWITCH TABLE

Symbol	Name	Condition	Problem
S1	Pulse Generator Sensor	Open	Self-diagnostic code "E6" lights. "
		Short	Same as "Open" condition.
S2	Toner End Sensor	Open	The CPU will not detect toner end in toner end condition.
		Short	Same as "Open" condition.
S3	Manual Feed Sensor	Open	The copier will not shift to the manual feed mode when the manual feed table is opened.
		Short	"Manual Feed" indicator lights even when the manual feed table is closed.
S4	Image Density Sensor	Open	Image density indicator blinks (image density senso'r abnormal) and the copier shifts to the fixed toner supply mode.
		Short	Same as "Open" condition.
S5	Paper End Sensor	Open	"Load Paper" indicator lights even when paper is present.
		Short	"Load Paper" indicator will not light even when paper is not present.
S6	Registration Sensor	Open	Paper always jams at the registration roller.
		Short	"Check Paper Path" indicator lights when the main switch is turned on.

Symbol	Name	Condition	Problem
S7	Paper Exit Sensor	Open	Paper always jams at the paper exit roller.
		Short	"Check Paper Path" indicator lights when the main switch is turned on.
S8	Scanner Home Position Sensor	Open	Self-diagnostic code "E2" lights.
		Short	Same as "Open" condition.
S9	Toner Overflow	Open	Self-diagnostic code "E7" lights even when the used toner tank is not full.
		Short	The CPU will not detect the toner overflow condition.
S10	Oil End Sensor	Open	The CPU will not detect the oil end condition.
		Short	User code "U5" lights even when silicone oil is in the oil tank.
S11	Paper Lift Sensor	Open	Paper in the cassette does not stop at the feed position and finally stops after 5 seconds lighting the "Add Paper" indicator.
		Short	Paper in the cassette is not lifted to the feed position.
S12	Original ID Sensor	Open	**"EI"** lights when pressing the "Start" key.
		Short	Same as "Open" condition.
Swl	Main Switch	Open	Copier cannot be powered.
		Short	Copier cannot be depowered.

Symbol	Name	Condition	Problem
SW2	Door Switch	Open	Copier can not be powered.
		Short	Copier can not be depowered even when the front cover or the exit cover is opened.
SW3	Development Set **Switch**	Open	**User code "U3" lights even when the development unit** is in the copier.
		Short	The copier becomes ready without setting the development unit.

RICOH

RICOH FT3320(AO17)

PARTS CATALOG

First Edition November 1987

RICOH COMPANY, LTD.

PARTS CATALOG

INTRODUCTION

This chapter instructs you the numbers and names of the parts on this machine.

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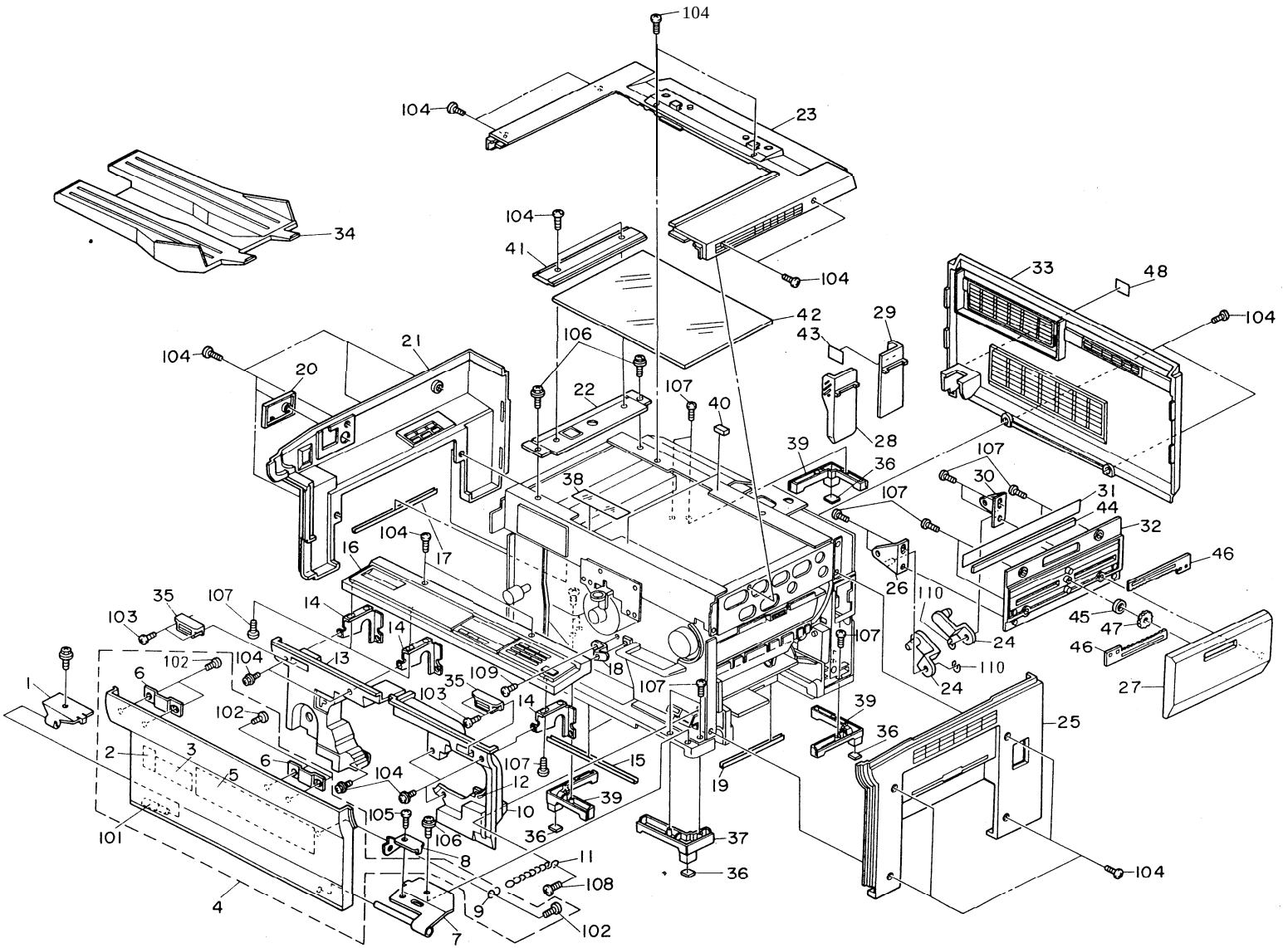
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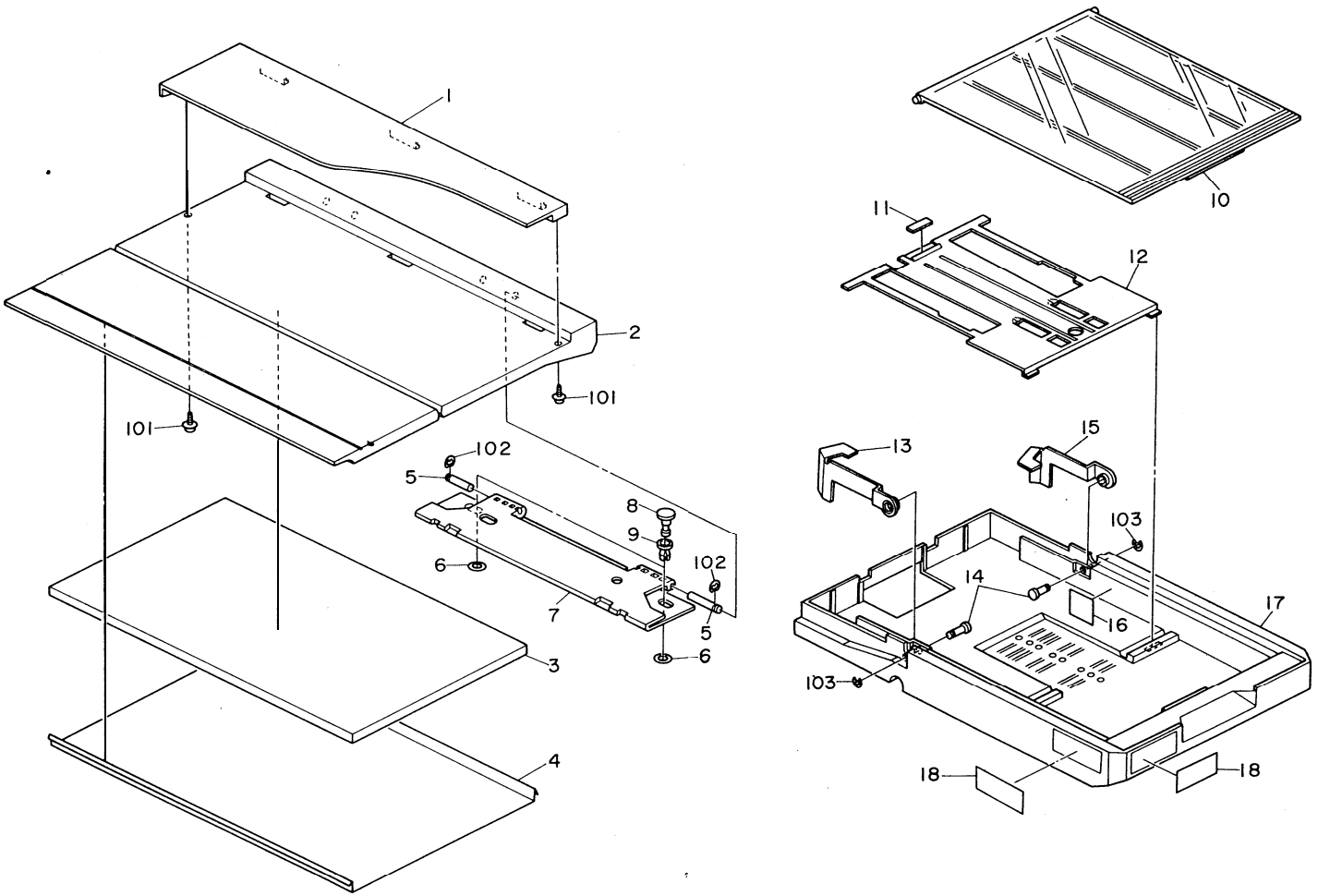
1. EXTERIOR

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 1281	Front Cover Hinge - Left	1
2	A017 4982	Decal - Indicator	1
3	A017 4981	Decal - Adding Toner	1
4	A017 1260	Front Cover	1
5	A017 4990	Decal - Clear Misfeed	1
6	A017 1285	Magnet Plate	2
7	A017 1282	Front Cover Hinge - Right	1
8	A017 1284*	Front Cover Angle	1
9	A017 1288	Hook	1
10	A017 1330	Right Inner Cover	1
11	A017 1286	Front Cover Chain	1
12	A017 4976	Decal - Toner Cartridge	1
13	A017 1320	Left Inner Cover	1
14	A017 5812	Operation Panel Bracket	3
15	A017 1086	Edge Cover - 256mm	1
16	A017 5660	Operation Panel Ass'y - A3/A4	1
16	A017 5560	Operation Panel Ass'y - LT/LDG	1
17	A017 1087	Edge Cover - 201mm	1
18	A017 3193	Denvelopment Unit Bracket	1
19	A017 1089	Edge Cover - 180mm	1
20	A017 1311	Scanner Clamp Cover	1
21	A017 1291	Left Cover	1
22	A017 1800	Mounting Plate	1
23	A017 1251	Upper Cover	1
24	A017 2758	Manual Feed Link Holder	2
25	A017 1301	Right Cover	1
26	A017 2754	Left Manual Feed Bracket	1
27	A017 2816	Manual Feed Cover	1
28	A017 2821	Frent Manual Feed Guide	1
29	A017 2831	Rear Manual Feed Guide	1
30	A017 2753	Right Manual Feed Bracket	1
31	A017 4971	Decal - Manual Feed - A3/A4	1
31	A017 4972	Decal - Manual Feed - LT/LDG	1
32	A017 2801	Manual Feed Table	1
33	A017 1266	Rear Cover	1
34	AF04 3008	Receiving Tray	1
35	5054 0536	Magnet Catch Ass'y	2
36	AH01 0003	Rubber Foot	h
37	AG05 1019	Grasp Holder 1	1
38	AA15 0050	Sea 1 - 0.2x25x115	1
39	AG05 1018	Grasp Holder 2	3
40	5215 1924	Cushion	1
41	AC04 3007	Left Scale - A3/A4	1
41	AC04 3008	Left Scale - LT/LDG	1
42	ACO1 2008	Exposure Glass	1
43	AA00 1074	Decal - Side Fence - Manual Feed	1
44	A017 2805	Plate	1
45	5215 2691	Brake	1
46	A008 2688	Side Fence Gear	2
47	5215 2687	Gear - 16T	1
48	5442 1372	Decal - Power Source - 220V	1
101	0624 0400E	Spring Pin 4x40	
102	0413 0062W	Tapping Screw - **M3x6**	
103	0802 5085	Tapping Screw - M4x8	
104	0353 0060F	Philips Truss Head Screw - **M3x6**	
105	0313 0050W	Philips Pan Head Screw - M3x5	
106	0443 0060W	Hexagon Head Tapping Screw - **M3x6**	
107	0413 0082W	Tapping Screw - M3x8	
108	0314 0060F	Philips Pan Head Screw - M4x6	
109	0313 0060W	Philips Pan Head Screw - M3x6	
110	0720 0040E	Retaining Ring - M4	

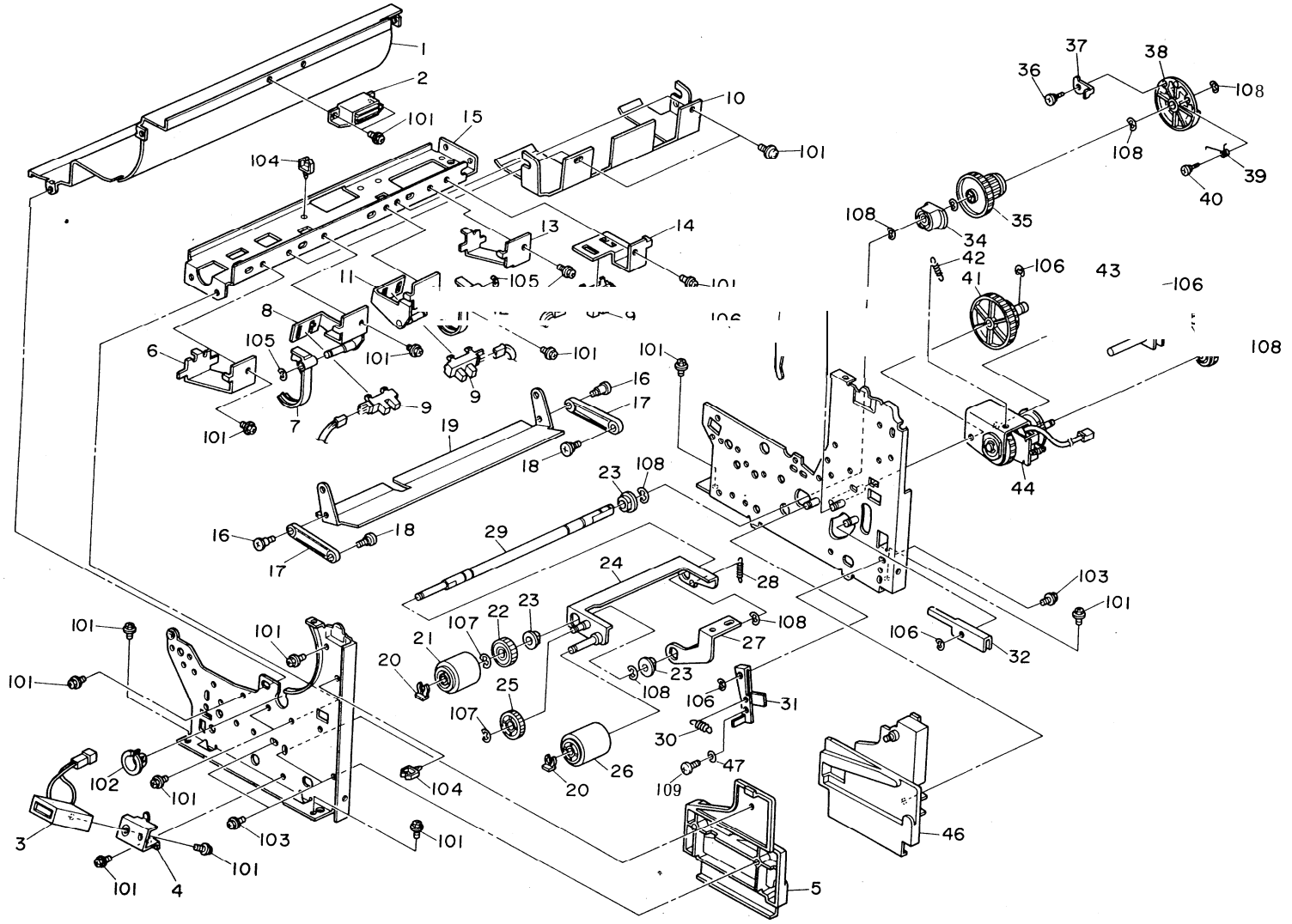
2. PLATEN COVER AND CASSETTE



2. PLATEN COVER AND CASSETTE

1 ndex No.	Part No.	Description	Q'ty Per Assembly
*	A017 191O	Platen Cover Ass'y	1
1	A017 1926	Original Holder	1
2	A017 1919	Platen Cover	1
3	A017 1927	Platen Cover Pad	1
4	A017 9500	Platen Cover Sheet (10 Sheets/set)	1
5	5216 1374	Hinge Shaft - Platen Cover	2
6	5203 1359	Platen Cover Washer	2
7	A017 1924	Flex Hinge - Platen Cover	1
8	5216 1373	Ratch - Plunger	2
9	5216 1372	Ratch - Grommet	2
10	AF01 2023	Cove r - Cassette - A4	1
10	AF01 2026	Cover - Cassette - Legal	1
11	5447 2927	Friction Pad - B	1
12	AF01 1003	Bottom Plate	1
13	A017 2954	Front Side Fence - A4	1
13	A017 2958	Front Side Fence - Legal	1
14	AA14 8063	Pin - 6x14 - A4	1
14	AA14 8064	Pin - Legal	2
15	A017 2951	Rear Side Fence - A4	1
15	A017 2957	Rear Side Fence - Legal	1
16	AA00 2010	Decal - Paper Level	1
17	AF01 0004	Cassette - A4	1
17	AF01 0005	Cassette - Legal	1
18	AA00 2016	Decal Sheet - Small - A4/A3	1
	AA00 2017	Decal Sheet - Large - LT/LDG	1
	AA00 2018	Decal Sheet - Large - A4/A3	1
	AA00 2015	Decal Sheet - Small - LT/LDG	1

Index No,	Part No.	Description	Q'ty Per Assembly
101	0965 4008W	Tapping Screw With Flat Washer - M4x8	
102	0725 0025E	Retaining Ring C- M2	
103	0720 0030E	Retaining Ring - M3	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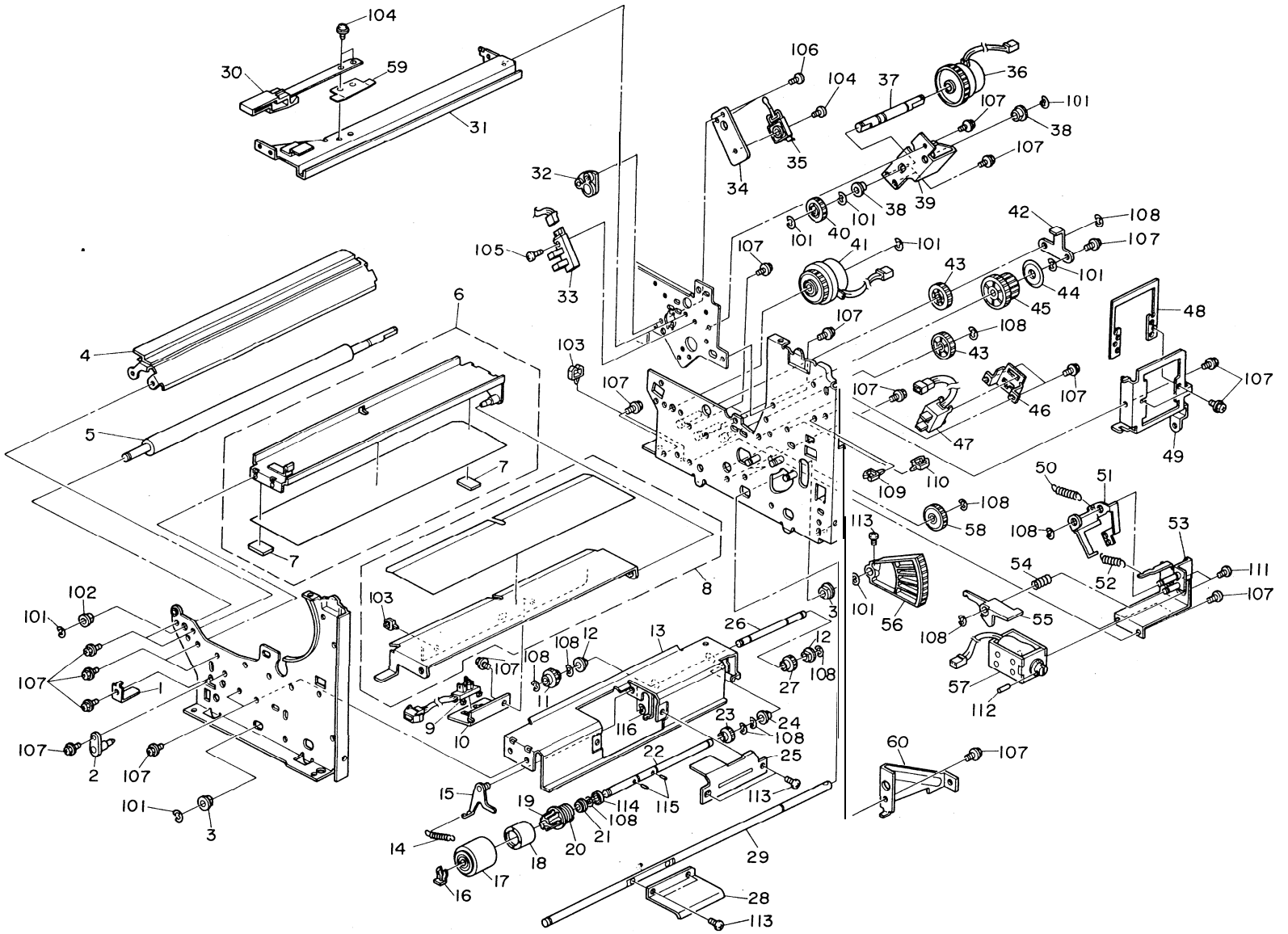
3. PAPER FEED I

~OV. 1, '87

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 2672	Upper Paper Feed Stay	1
2	5054 0536	Magnet Catch Ass'y	1
3	AX31 0002	Total Counter	1
h	A017 5814	Bracket - Total Counter	1
5	AO17 2781	Front Cassette Holder .	1
6	A017 2618	Manual Feed Bracket	1
7	A017 2624	Paper End Feeler	1
8	A017 2622	Paper End Sensor Bracket	1
9	AW02 0015	Photo Sensor	3
10	A017 2605	Paper Feed Guide	1
11	A017 2642	Level Sensor Bracket	1
12	A017 2644	Level Sensor Feeler	1
13	A017 2619	Rear Manual Feed Bracket	1
14	A017 2625	Manual Feed Sensor Bracket	1
15	A017 2591	Paper Feed Stay	1
16	AA14 3058	Pin - 10x12	2
17	A017 2755	Manual Feed Link	2
18	AA14 3059	Pin - 6x16	2
19	A017 2751	Manual Feed Guide	1
20	5447 2681	snap Ring	2
21	5447 2726	Paper Feed Roller	1
22	5L47 2736	Gear - 18T	1
23	5053 0223	Bushing - 8mm	3
24	A017 2615	Feed Roller Arm	1
25	5205 2612	Gear - 19T	1
26	5447 2723	Pick-up Roller	1
27	AOi7 2613	Bracket - Paper Feed Roller	1
28	AA06 0108	Pick-up Spring	2
29	AA14 0118	Feed Roller Shaft	1
30	AA06 0109	Lever Spring	1
31	A017 2716	Lift Lever	1
32	A017 2713	Pick-up Arm	1
33	A017 2740	cassette Release Arm	1
34	5447 2728	Bushing - Paper Feed Roller	2
35	AB04 0001	spring Clutch Ass'y	1

1 ndex No.	Part No.	Description	Q'ty Per Assembly
36	5b47 2768	Stepped Screw	2
37	A017 2722	Release Pawl	1
38	A017 2721	Release Cam	1
39	AA06 6029	Ratchet Spring	1
40	5447 2769	Stepped Screw	L
41	ABO1 7089	Coupled Gear - 20/LOT	1
hz	AA06 0110	Paper Pick-up Spring	1
43	A017 2711	Pick-up Lever	1
44	A017 5264	Spring Clutch Ass'y	1
45	ABO1 3193	Gear - 18T	1
46	A017 2791	Rear Cassette Holder	1
47	A017 2717	Collar - 3.5x7.5x5.2mm	1
101	0443 0060W	Hexagon Head Tapping Screw - M3x6	
102	1106 0430	Bushing - 13mm	
103	0413 O1O2E	Tapping Screw - M3x1O	
104	1105 0230	c lamp	
105	0720 0030E	Retaining Ring - M3	
106	0720 0040E	Retaining Ring - M4	
107	0720 0050E	Retaining Ring - MS	
108	0720 0060E	Retaining Ring - M6	
109	0413 O1OOW	Tapping Screw - M3x1O	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4. PAPER FEED II

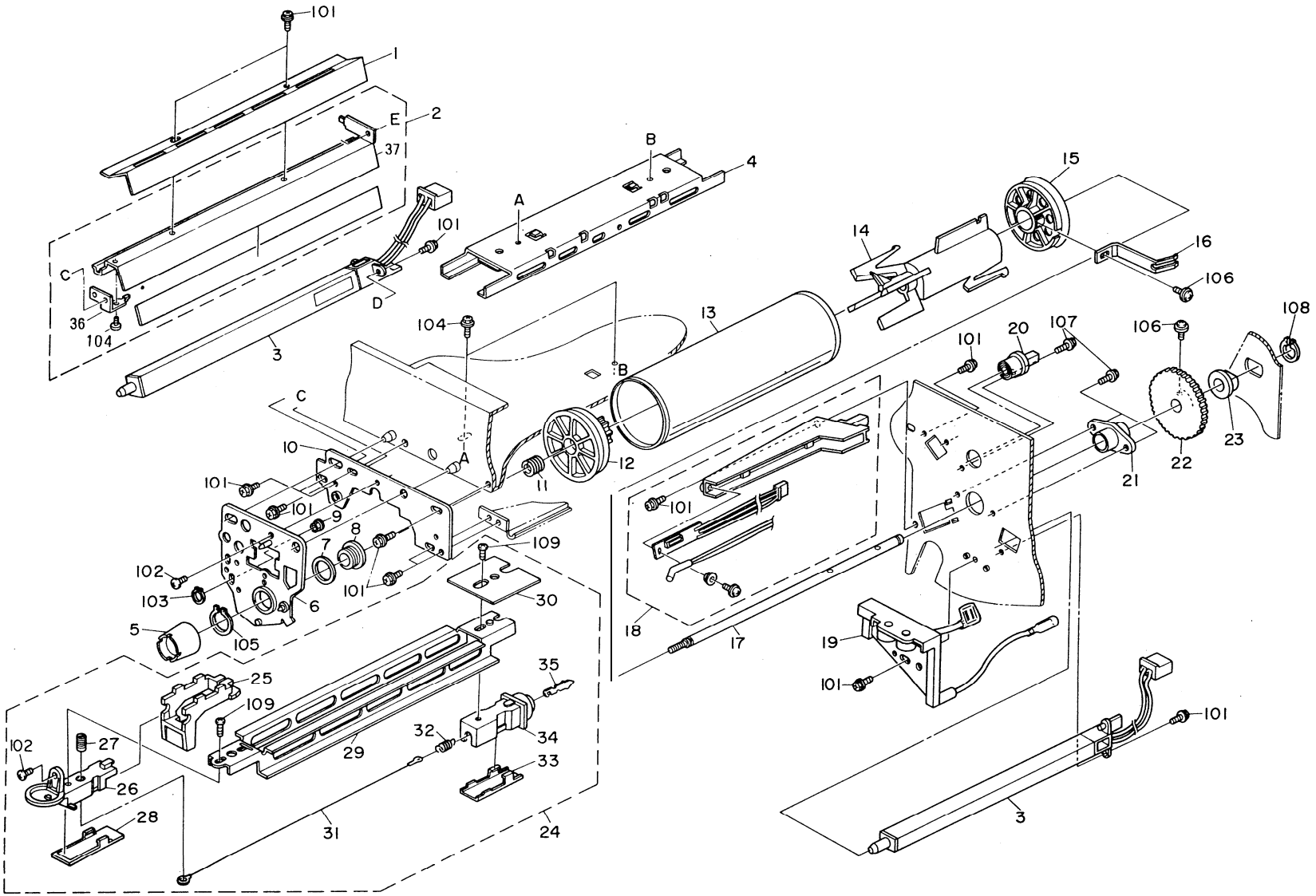
Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 2668	Spring Plate - Registration	1
2	A017 2667	Guide Plate Pin	t
3	5053 0223	Bushing - 8mm	2
h	A017 2655	ID Sensor Guide	1
5	AF02 0057	Upper Registration Roller	1
6	A017 2677	Registration Upper Guide	1
7	AO07 2628.	Cushion - Registration Upper Guide	2
8	A017 2666	Registration Lower Guide	1
9	AW02 0017	Photo Sensor	1
10	A017 2665	Registration Sensor Bracket	1
11	5447 2683	Gear - 18T	1
12	5053 obh7	Bushing - 6mm	2
13	A017 2630	Separation Roller Guide	1
14	5447 2709	Pressure Spring	1
15	5447 2707	Separation Roller Arm	1
16	5447 2681	Snap Ring	1
17	5447 2693	Separation Roller	1
18	5447 2678	Slip Clutch Cover	1
19	5447 2688	Output Hub	1
20	5447 2697	Cylindrical Spring	1
21	5447 2695	Input Hub	1
22	AA14 0120	Separation Roller Shaft	1
23	5447 2684	Gear - 18T	1
24	5053 0709	Bushing - 6x10x6mm	4
25	5467 2596	Separation Roller Cover	1
26	AA14 0119	Shaft - Separation Roller Drive	1
27	5447 2698	Gear - 1ST	1
28	54Ii7 2793	Cassette Arm	1
29	AA14 0121	Cassette Arm Shaft	1
30	A017 3195	Development Unit Stopper	1
31	A017 3127	Development Rail	1
32	A017 3120	Terminal Holder	1
33	AW02 0014	Photo Sensor	1
34	A017 3123	Terminal Cover	1
35	A017 3124	Bias Terminal	1

Index No.	Part No.	Description	Q'ty Per Assembly
36	AX20 0028"	Magnetic Clutch	1
37	AA14 8070	Toner Supply Shaft	1
38	5446 6209	Bushing - 8x12x5.5mm	2
39	A017 3179	Toner Supply Drive Holder	1
40	5205 3306	Gear - 18T	1
41	AX20 0029	Magnetic Clutch	1
42	A017 2691	Magnetic Clutch Bracket	1
43	ABO1 3191	Gear - 24T	2
44	A017 2988	Ring	1
45	ABOI 7090	Pulley - 30T	1
46	A017 3201	Color Sensor Bracket	1
47	AW50 0002	Push Switch	1
48	5420 1515	Plate - Key Counter	1
49	A017 1088	Key Counter Bracket	1
50	5447 2743	Lever Spring	1
51	A017 2735	Paper Feed Lever	1
52	AA06 0130	Spring - Paper Pick-up	1
53	A017 2731	Solenoid Bracket	1
54	AA06 3046	Lever Spring	1
55	AOi7 2737	Stopper	1
56	A017 2759	Gear - 94T	1
57	AX1l 0010	Paper Feed Solenoid	1
58	ABO1 3192	Gear - 25T	1
59	A017 3198	Development Rail Guide	1
60	A017 2696	Angle	1

Index No.	Part No.	Description	()'ty Per Assembly
101	0720 O060E	Retaining Ring - M6	
102	0805 3386	Bushing - 8mm	
103	1105 0199	Clamp	
104	0960 3006W	Philips Flange Screw - M3x6	
105	0314 0120W	Philips Pan Head Screw - M4x12	
106	0313 O080W	Philips Pan Head Screw - M3x8	
107	0443 O060W	Hexagon Head Tapping Screw - M3x6	
108	0720 0040~	Retaining Ring - M4	
109	1105 0231	Clamp	
110	1105 0230	Clamp	
111	0313 O050W	Philips Pan Head Screw - M3x5	
l1z	0623 O1OOE	Spring Pin - 3x10mm	
113	0314 O080W	Philips Pan Head Screw - M4x8	
i14	0805 3042	Ball Bearing - 6x10x3mm	
115	0622 O1OOE	Spring Pin - 2X10mm	
116	0720 O030E	Retaining Ring – m3	

Index No.	Part No.	Description	Q'ty Per Assembly

5. DRUM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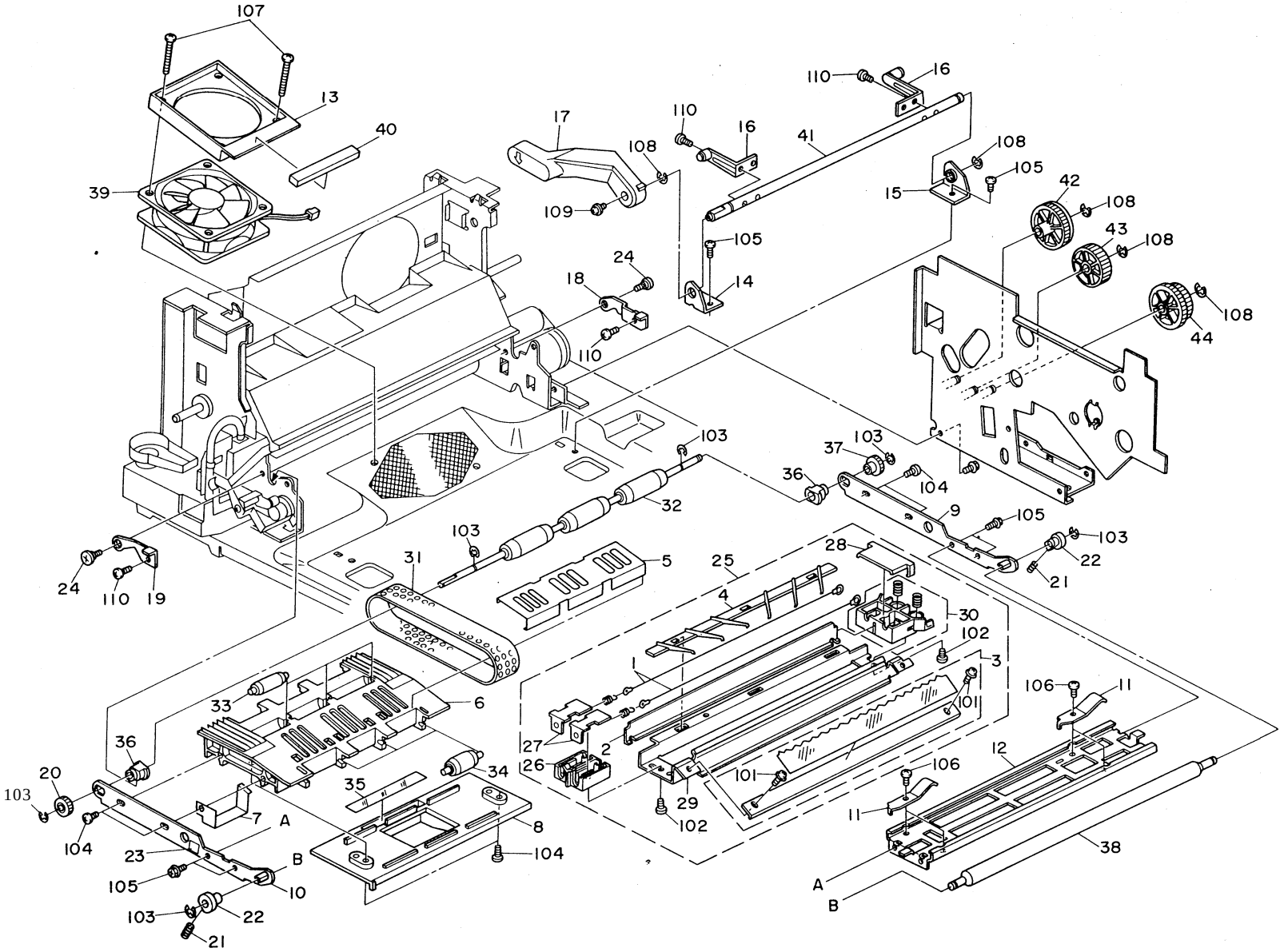
5. DRUM

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 2054	Shield Plate - Quenching	1
2	A017 2055	Cleaning Unit Rail Ass'y	1
3	AOi7 5610	Quenching Lamp - 220/240V	2
3	A017 5510	Quenching Lamp - 115V	1
4	A017 2070	Charge Corona Rail	1
5	5211 2267	Drum Shaft Knob	1
6	A017 2261	Drum Stay	1
7	5211 225~	Spacer - M20x0.1	1
8	5211 2365	Bushing - 12x19xllmm	1
9	5442 3585	Bushing	1
10	A017 2264	Front Drum Plate	1
11	5447 2266	Drum Flange Spring	1
12	5447 2257	Front Drum Flange	1
13	A017 9590	Drum	1
14	5447 2286	Drum Guide	1
15	ADO1 4003	Rear Flange	1
16	A017 2274	Spring Plate	1
17	ADO1 5005	Drum Shaft	1
18	A017 5269	ID Sensor Board	1
19	AD02 1018	I' & S Corona Receptacle	1
20	5442 2165	Receptacle Housing Main Corona	1
21	AA08 2010	Bushing - 12x18x16mm	1
22	ABO1 3190	;ear - 60T	1
23	AA08 0038	Bushing - 12x18x8mm	1
24	ADOO 4017	;harge Corona Unit	1
25	AD02 2082	;harge Corona Cleaner	1
26	AD02 2080	Front End Block - Charge Corona	1
27	5442 2069	?lastic Screw - Main Corona	1
28	fUX12 2078	front Cover - Charge Corona	1
29	4D02 3024	;harge Corona Casing	1
30	!017 2062	;upport Plate – Change Corona	1
31	1017 9501	'lain Corona Wire (lOpcs/set)	1
32	5442 2108	;pring - Corona Wire	1
33	4D02 2079	Rear Cover - Charge Corona	1
34	W02 2081	Rear End Block - Charge Corona	1
35	5442 2110	Plug - Corona Unit	1
36	A017 2057	Cleaning Unit Rail Bracket	1
37	A017 2056	Cleaning Unit Rail	1
101	0443 O060W	Hexagon Head Tapping Screw - M3x6	
102	0314 O060W	Philips Pan Head Screw - M4x6	
103	0725 O1OOE	Retaining Ring C - MIO	
104	0313 O060W	Philips Pan Head Screw - M3x(j	
105	0725 0180E	Retaining Ring C- M18	
106	0951 4012W	Phili"ps Screw With Flat Washer - Mhx12	
107	0443 O080W	Hexagon Head Tapping Screw - M3x8	
108	0725 0120E	Retaining Ring C - M12	
109	0314 O050W	Philips Pan Head Screw - M4x5	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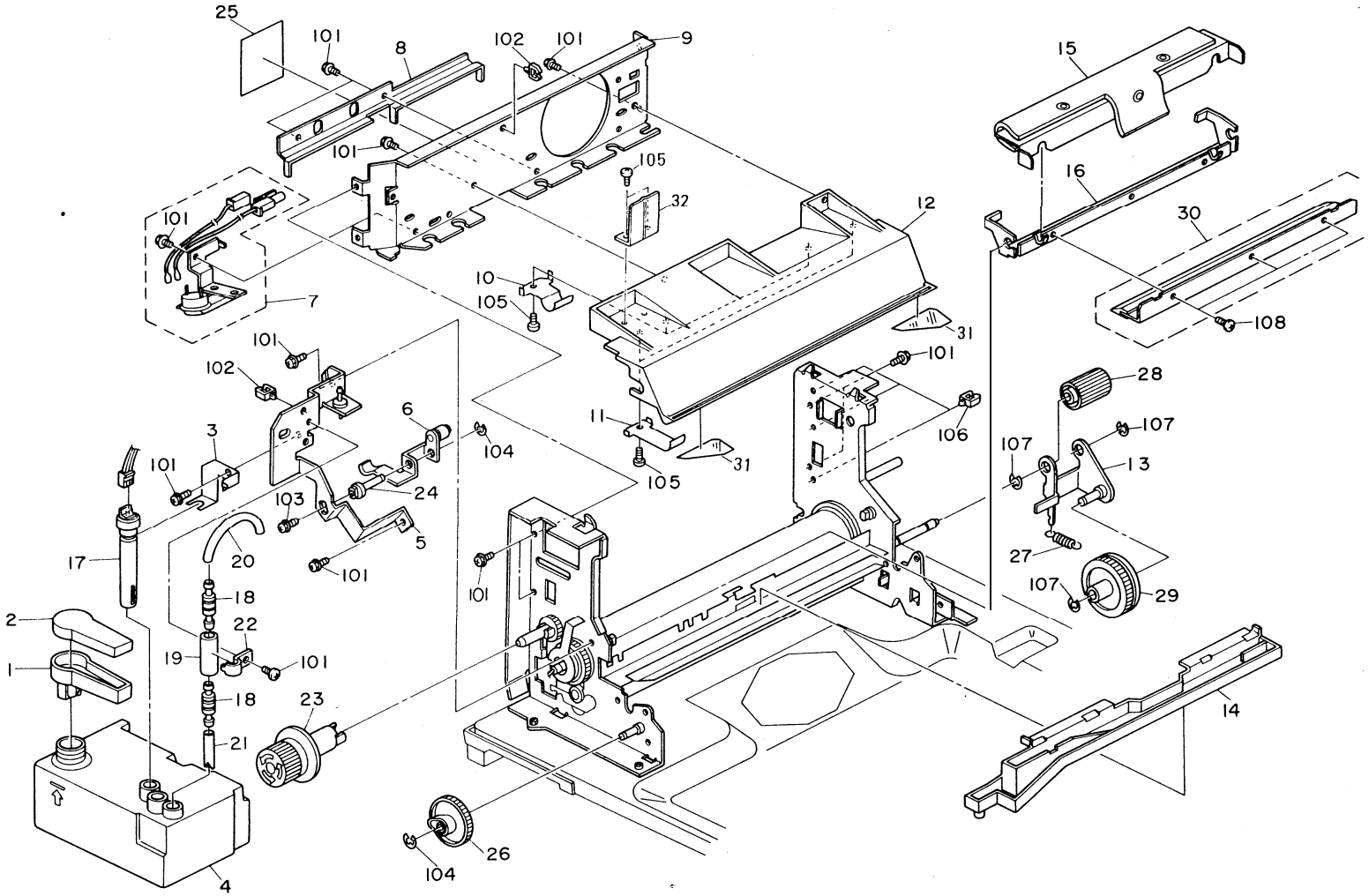
6. TRANSPORT

Index No.		Desciption	Q'ty Per Accemhlv
1	A017 9502	T& S Corona Wire (lOpcs/set)	1
2	A017 2103	Corona Separater Plate	1
3	A017 2105	T & S Corona Guide Plate	1
h	A017 2108	T & S Corona Guide	1
5	A017 3879	Grounding Plate	1
6	A017 3861	Transport Guide Plate	1
7	A017 3878	Small Grounding Plate	1
8	A017 3862"	Upper Duct	1
9	A017 3855	Rear Side Plate - Transport	1
10	A017 3853	Front Side Plate - Transport	1
11	A017 3876	Plate Spring - T&S Corona Rail	2
12	AOi7 3877	T& S Corona Rail	1
13	A017 3863	Lower Duct	1
14	A017 3892	Front Release Lever Bracket	1
15	A017 3893	Rear Release Lever Bracket	1
16	A017 3887	Lock Arm - Transport	2
17	A017 3890	Release Lever - Transport	1
18	A017 3896	Rear Support Plate - Transport	1
19	A017 3895	Front Support Plate - Transport	1
20	5447 3922	Gear - 16T	1
21	5442 2754	spring - Registration Roller	2
22	5442 2751	Bushing - Upper Registration Roller	2
23	5203 13A9	Rear Positioning Decal - Development	1
24	5447 2768	stepped Screw - M3	2
25	ADOO 4018	T & S Corona Unit	1
26	AD02 2073	Frent End Block - T & S Corona	1
27	AD02 2076	Frent End Block Cover - T & S Corona	2
28	AD02 2077	Rear End Block Cover - T & S Corona	1
29	AD02 3025	T & S Corona Casing	1
30	AD02 2074	Rear End Block - T& S Corona	1
31	AA04 0010	Transport Belt	3
32	AF02 2008	Transport Drive Roller	1
33	AF02 2012	Middle Transport Roller	3
34	AF02 2010	Transport Guide Roller	'3
35	AA15 0053	Mylar Seal - 20x118	1
36	AA08 2011	Bushing - 6x13mm	2
37	ABO1 3198	Gear - 20T	1
38	AF02 1025	Lower Registration Roller	1
39	AX64 0003	Fan Motor	1
40	AA15 1170	Seal - 6x14x85	1
41	AA14 0124	Lock Shaft - Transport Unit	1
42	AB01 3196	Gear - 36T	1
43	AB01 3194	Gear - 34T	1
44	AB01 7093	Gear - 28T	2
101	0951 3005W	Philips Screw With Flat Washer - M3x5	
102	0413 O062W	Tapping Screw - M3x6	
103	0720 O040E	Retaining Ring - M4	
104	0413 0082W	Tapping Screw - M3x8	
105	0443 O060W	Hexagon Head Tapping Screw - M3x6	
106	0313 0608Z	Philips Pan Head Screw - M6x8	
107	0314 0300W	Philips Pan Head Screw - M4x30	
108	0720 O060E	Retaining Ring - M6	
109	0951 3006W	Philips Screw With Flat Washer - M3x6	
110	0313 O060W	Philips Pan Head Screw - M3x6	

7. FUSING 1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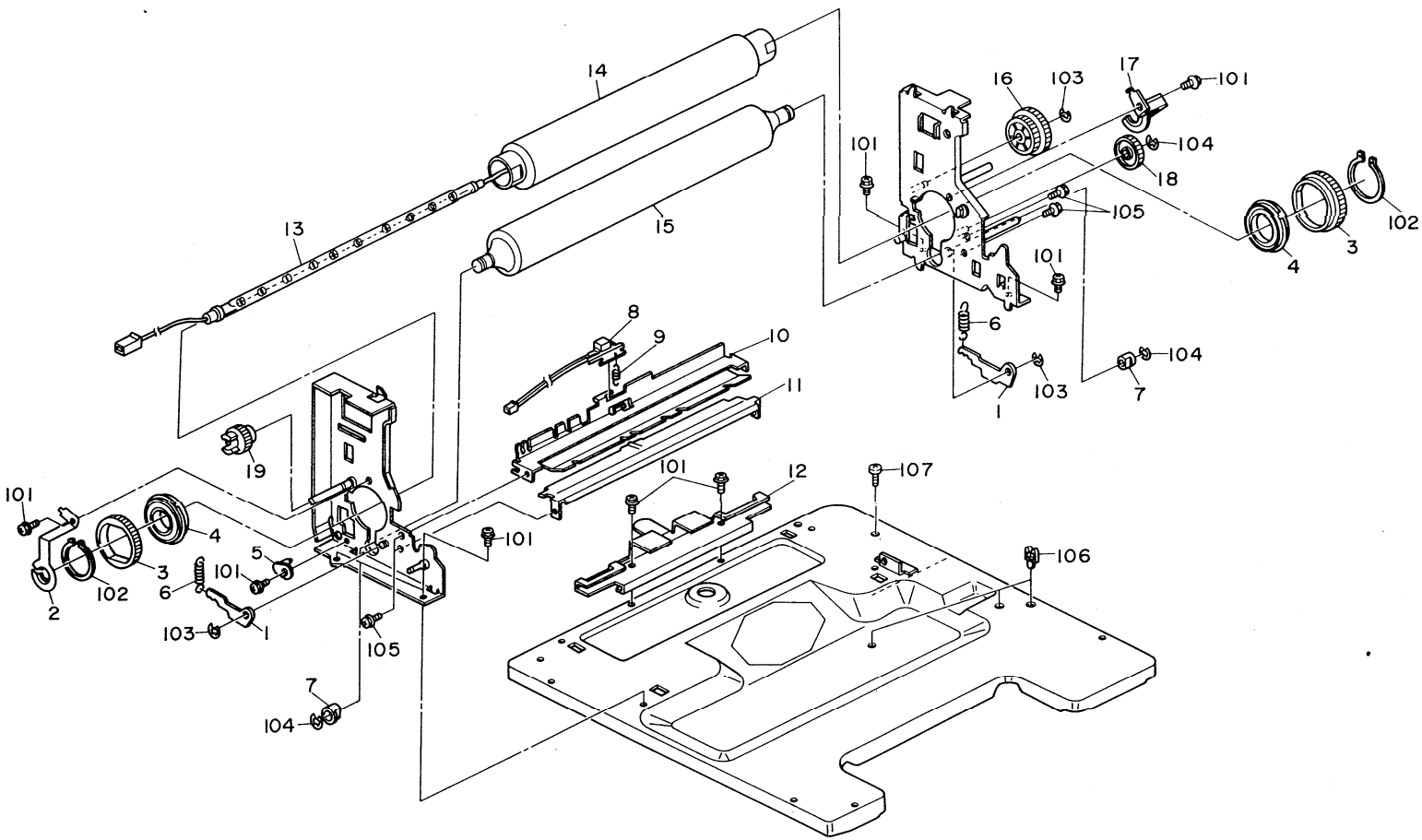
7. FUSING I

Index No.	Part No.	Description	Q'ty Per Assembly
1	AO17 4323	Oil Supply Guide	1
2	A017 4324	Oil Bottle Cap	1
3	A017 4322	Spring Plate - Oil End Sensor	1
4	A017 4321	Oil Tank	1
5	A017 4306	Oil Pump Bracket	1
6	A017 4302	Oil Pump Lever	1
7	A017 5531	Temperature Thermostat	1
8	AO17 4187	Bracket - Hot Roller Stripper	1
9	A017 4186	Fan Motor Bracket	1
10	A017 4152	Spring Plate - Oil Suppley Pad	2
11	A017 4153	Spring Plate - Oil Blade	2
12	A017 4151	Fusing Cover	1
13	A017 1092	Fusing Arm	1
14	A017 4197	Oil Sump	1
15	A017 4131	Oil Supply Pad	1
16	A017 4191	Oil Blade Holder	1
17	AWO1 0002	Oil End Sensor	1
18	5415 4310	Valve - Oil Pump	2
19	AA18 0007	Sleeve - Oil Pump	1
20	AA18 0003	Oil Tube - 63mm	1
21	AA18 0004	Oil Tube - 35mm	1
A22	5447 4237	Oil Valve Holder	1
23	AG05 0016	Fusing Knob	1
24	AA14 6382	Shaft - Oil Pump Bracket	1
25	AAOO 0015	Decal - High Temperature	1
26	ABO1 7060	Cam Gear - 30T	1
27	5216 1840	Slider Lock Spring	1
28	ABO1 3195	Gear - 20T	1
29	ABO1 3196	Gear - 36T	2
30	AE04 3001	Oil Blade	1
31	A017 4155	Mylay Seal - Fusing Entrance	2
32	A017 4154	Safety Switch Bracket	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0443 0060W	Hexagon Head Tapping Screw - M3x6	
102	1lo5 0199	Clamp	
103	0964 4006W	Tapping Screw With Flat Washer - M4x6	
104	0720 O040E	Retaining Ring - M4	
105	0443 0082W	Hexagpm Head Tapping Screw - M3x8	
106	1105 0230	Clamp	
107	0720 O060E	Retaining Ring - M6	
108	0313 O050W	Philips Pan Head Screw - M3x5	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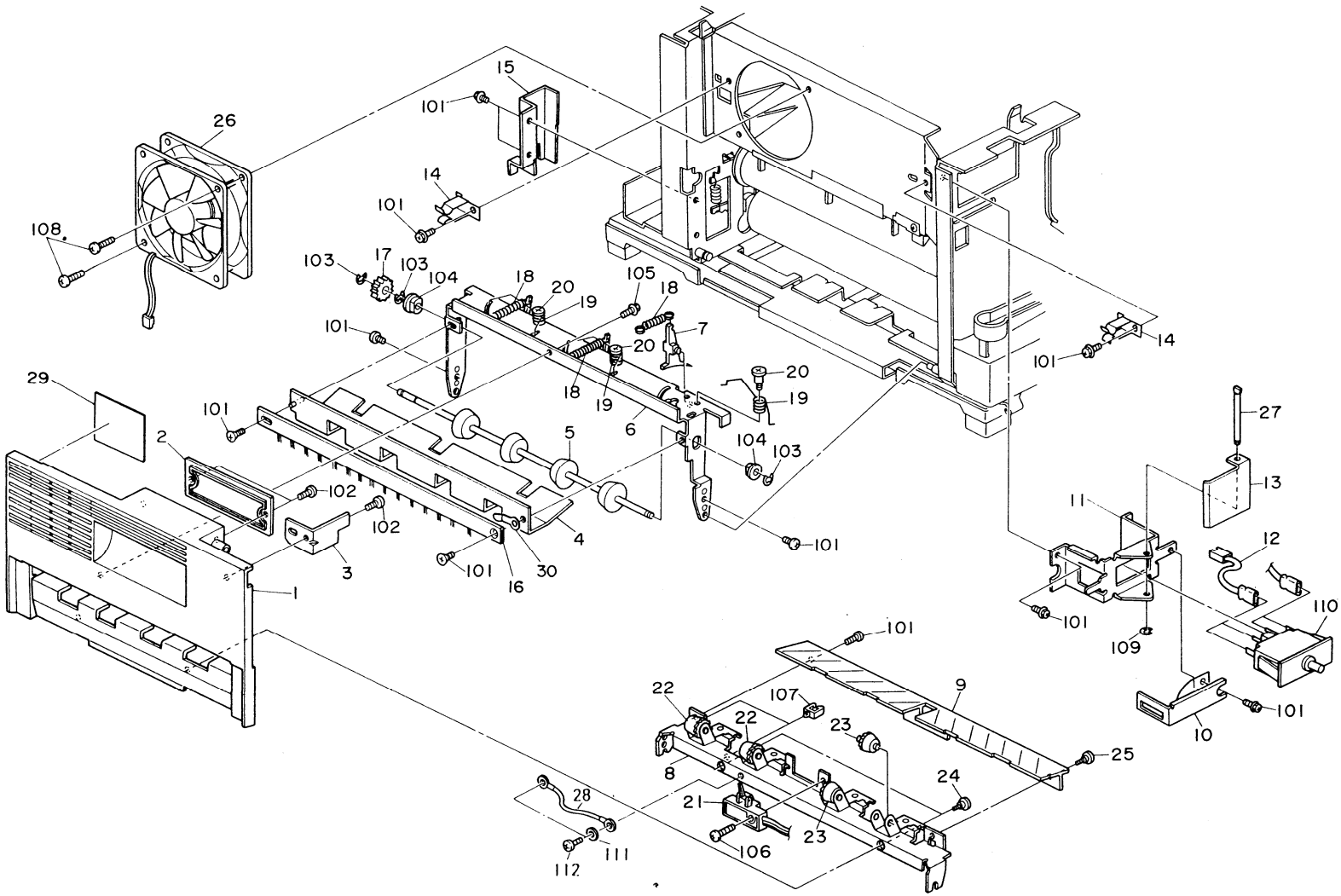
8. FUSING II

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 4085	Pressure Lever	2
2	AAll 3009	Front Fusing Lamp Holder	1
3	ABO1 3201	Gear - 40T	2
h	AE03 0004	Ball Bearing - 30x47x9	2
5	A017 4075	Stud - Exit Unit	1
6	AA06 0116	Pressure Spring	2
7	AE03 1002	Bushing - 8x14x7	2
8	A017 5250"	Thermistor	1
9	5203 4146	Thermistor Spring	1
10	A017 4161	Upper Entrnace Guide	1
11	A017 4175	Lower Entrance Guide	1
12	A017 4362	Receiving Tray Bracket	1
13	A)(44 0014	Fusing Lamp - 220/240V	1
13	AX44 0013	Fusing Lamp - 115V	1
14	AEOI 1012	Hot Roller	1
15	AE02 0006	Pressure Roller	1
16	ABO1 7059	Coupled Gear - 29T/40T	1
17	AA1l 3010	Rear Fusing Lamp Holder	1
18	ABO1 3197	Gear - 30T	1
19	5447 4213	Gear - 20T	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0443 O060W	Hexagon Head Tapping Screw - M3x6	
102	0725 0300E	Retaining Ring C - M30	
103	0720 O040E	Retaining Ring - M4	
104	0720 O060E	Retaining Ring - M6	
105	0443 O080W	Hexagon Head Tapping Screw - M3x8	
106	1105 0199	Clamp	
107	0413 O082W	Tapping Screw - M3x8	

9. EXIT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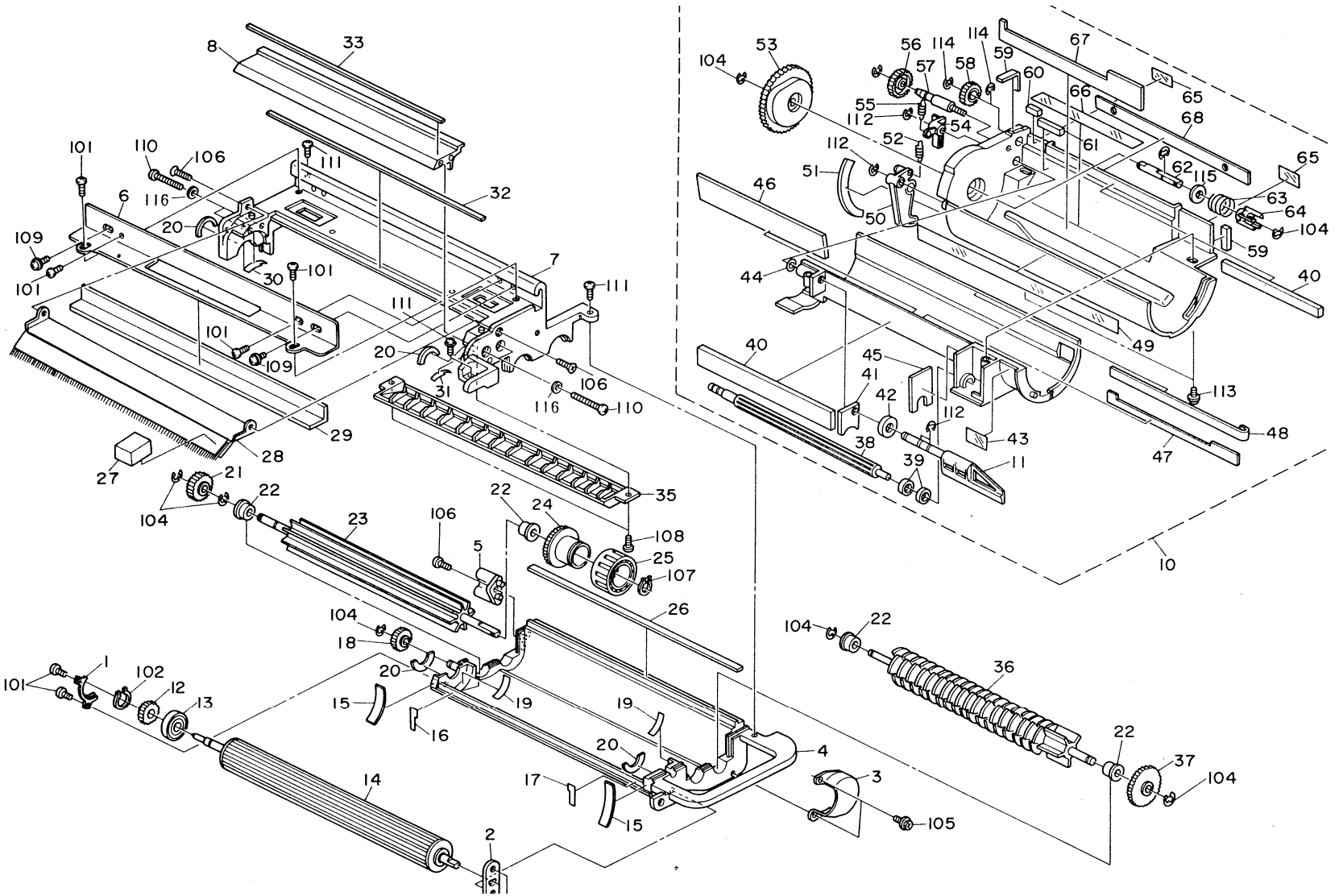
9. EXIT

Index No.	Part No.	Description	Q'ty Per Assembly
1	AO17 4281	Exit Cover	1
2	A017 4285	Exit Cover Guide	1
3	A017 6284	Safety Switch Actuator	1
4	A017 4286	Upper Exit Guide	1
5	A017 4261	Upper Exit Roller	1
6	A017 4233	Exit Frame	1
7	A017 9503	Hot Roller Stripper (3pcs/set)	1
8	A017 4234	Exit Stay	1
9	A017 4291	Lower Exit Guide	1
10	A017 5818	Safety Switch Lever	1
11	A017 5816	Safety Switch Bracket	1
12	A017 5355	Safety Switch Harness	1
13	A017 5828	Exit Lever - Safety Switch	1
14	A017 4283	Spring Plate - Fan Motor Bracket	2
15	A017 4093	Rear Left Cover - Fusing	1
16	AA12 0006	Antistatic Brush	1
17	ABO1 3208	Gear - 13T	1
18	5203 4168!	Stripper Spring	3
19	AA06 6030	Spring - Hot Roller Stripper	3
20	AA14 3039	Spring Holder	3
21	AW02 0016	Exit Sensor	1
22	AF04 0009	Rear Lower Exit Roller	2
23	AF04 0008	Front Lower Exit Roller	2
24	5447 2768	Stepped Screw - M3	1
25	5206 2684	Shoulder Screw - M3	1
26	AX64 0003	Fan Motor	1
27	AA14 8069	Safety Switch Shaft	1
28	AZ40 0007	Grounding Wire	1
29	AAI1 2008	Exit Filter	1
30	5895 6155	Grounding Plate Angle	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0443 0060W	Hexagon Head Tapping Screw - M3x6	
102	0413 0062W	Tapping Screw - M3x6	
103	0720 0040E	Retaining Ring - M4	
104	0805 3385	Bushing - 6mm	
105	0951 3008W	Philips Screw With Flat Washer - M3x8	
106	0313 0120W	Philips Pan Head Screw - M3x12	
107	1105 0199	Clamp	
108	0313 0300W	Philips Pan Head Screw - M3x30	
109	0720 0023E	Retaining Ring - M2.5	
110	1204 1373	Push Switch	
111	0704 0030C	Toothed Washer - 3mm	
112	0950 3008M	lPhilips Truss Head Screw - M3x8	

10. DEVELOPMENT



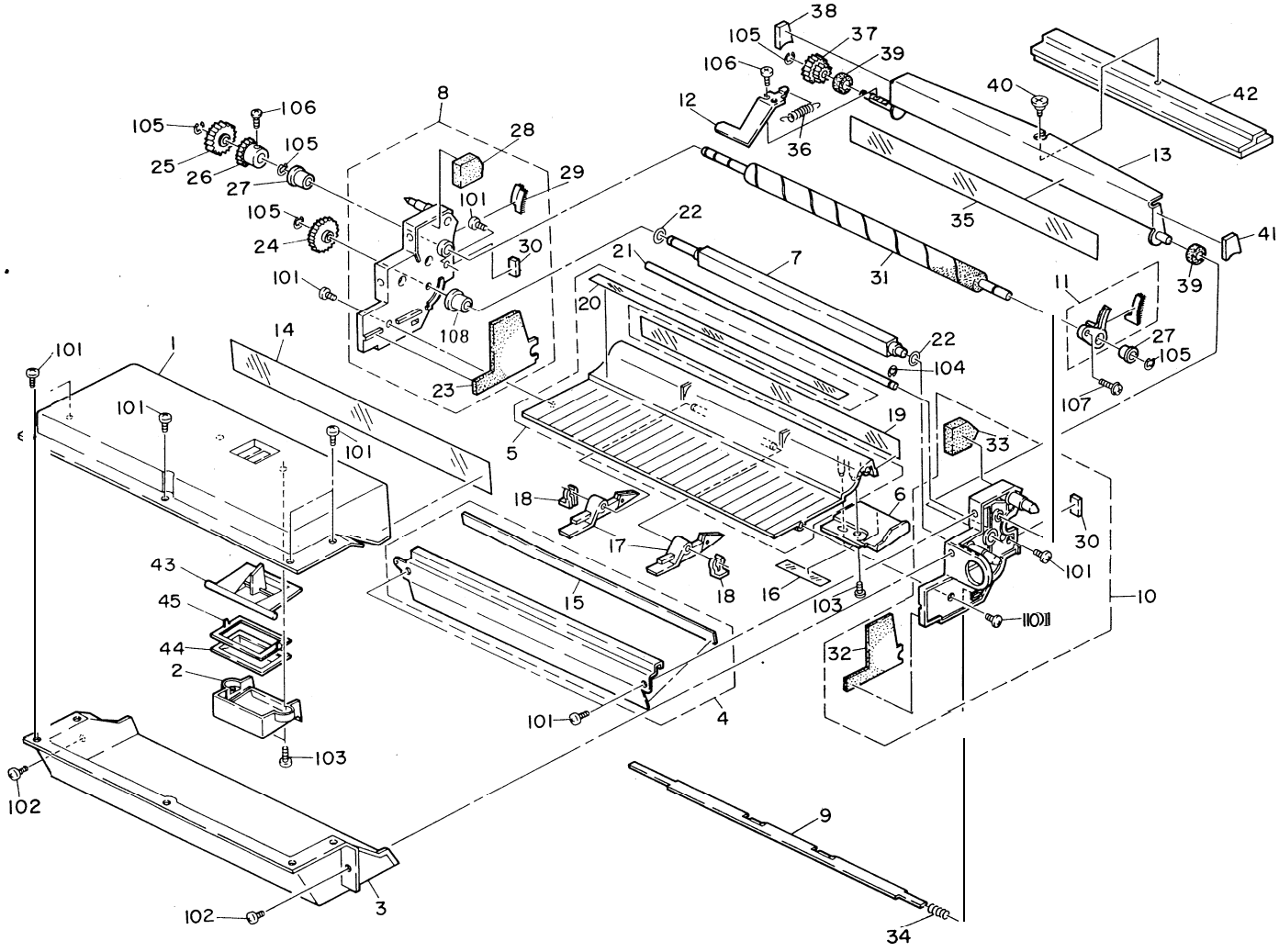
10. DEVELOPMENT

Index No.	Part No.	Description	Q'ty Per Assembly
*	A017 3001	Development Unit	
1	A017 3121	Bearing Retainer	1
2	A017 3096	Adjusting Plate - Magnet Angle	1
3	A017 3126	Development Gear Cover	1
4	A017 3075	Lower Casing	1
5	A017 3202	Set Sensor Actuater - Development Unit	1
6	A017 3131*	Development Filter	1
7	A017 3143	Upper Casing	1
8	A017 3161	Doctor Plate	1
10	A017 3007	Toner Supply Unit	1
11	A017 3178	Toner End Lever	1
12	ABO1 3203	Gear - 20T	1
13	5429 3561	Ball Bearing IOX26X8	1
14	AD03 1041	Development Sleeve	1
15	AA15 1157	Seal - 3x5x52	2
16	AA15 1171	Front Side Seal	1
17	AA15 1172	Rear Side Seal	1
18	ABO1 3204	Gear - 16T	1
19	AA15 0043	seal - llx35	2
20	AA15 2013	sea 1	h
21	ABO1 3205	Gear - 20T	1
22	5205 3103	Bushing - 6mm	4
23	AD03 8007	Paddle Roller	1
24	ABOI 3202	Gear - 32T	1
25	5215 3089	Developer Knob	1
26	AA15 1167	sea 1 - 3.5x7x2L6	1
27	AA15 1180	seal - Development Unit	1
28	AA15 2024	Entrance Seal	1
29	AA15 1168	sea 1 - Filter	1
30	AA15 oo4h	Mylar Seal - Upper Rear	1
31	AA15 0045	Mylar Seal - Upper Front	1
32	AA15 1158	seal - 2x5x222	1
33	AA15 1159	seal - 2x3x222	1
35	AD03 6010	separator - Development	1
36	AD03 8008	Denvelopment Auger	1

Index No.	Part No.	Description	Q'ty Per Assembly
37	ABO1 3206	Gear - 36T	1
38	AD03 300&	Toner Supply Roller	1
39	5215 3303	Seal - Toner Supply Roller	2
40	AA15 1164	Seal - 4x12x180	2
41	AA15 1181	Sea 1 - Rear	1
42	AA15 1182	Sea 1 - Toner End	1
43	AA15 0048	Seal - 25x3O	1
44	AA15 0062	Seal - Toner End Actuator	1
45	5215 3270	5ea 1 - Front	1
46	AA15 1163	Seal - 4x20x254	1
47	AA15 1165	Seal - 2x16x254	1
48"	AA15 1161	Seal - 2x5x267	1
49	AA15 0047	Seal - 12x264	1
50	5931 3330	roner End Lever	1
51	5215 3295	{opper Filter	1
52	5442 3233	Spring - I)rive Wheel	1
53	5215 3321	Gear - 56T	1
54	5931 3332	Toner End Actuator	1
55	4A06 0119	Arm Spring	1
56	ih47 3236	Gear - 23T	1
57	5215 3281	Pin	1
58	5205 3306	Gear - 18T	1
59	5215 3285	Sea 1	1
60	AA15 1160	Seal - 7x1OX23	1
61	5931 3302	Sea 1 - Toner End Case	1
62	5j215 3327	Shaft - Agitator	1
63	j215 3347	Spring - Gear	1
64	5j215 3328	Joint - Hopper	1
65	AA15 0046	Steal - 20x28	2
66	AA15 0049	Steal - 30x178	1
67	AA15 1166	Steal - 4x34x234	1
68	AA15 1162	Seal - 1x25x244	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0313 0050W	Philips Pan Head Screw - M3×5	
102	0725 0100E	Retaining Ring C - M10	
103	0951 3008W	Philips Screw With Flat Washer - M3×8	
104	0720 0040E	Retaining Ring - M4	
105	0443 0060W	Hexagon Head Tapping Screw - M3×6	
106	0313 0060W	Philips Pan Head Screw - M3×6	
107	0727 0060Z	Retaining Ring - M6	
108	0413 0082W	Tapping Screw - M3×8	
109	0960 3010W	Philips Flange Screw - M3×10	
110	0313 0250W	Philips Pan Head Screw - M3×25	
111	0443 0100W	Hexagon Head Tapping Screw - M3×10	
112	0720 0050E	Retaining Ring - M5	
113	0965 3010W	Tapping Screw With Flat Washer - M3×10	
114	0720 0070E	Retaining Ring - M7	
115	0807 4103	Spacer - 0.5mm	
116	0701 0030W	Flat Washer - M3	

Index No.	Part No.	Description	Q'ty Per Assembly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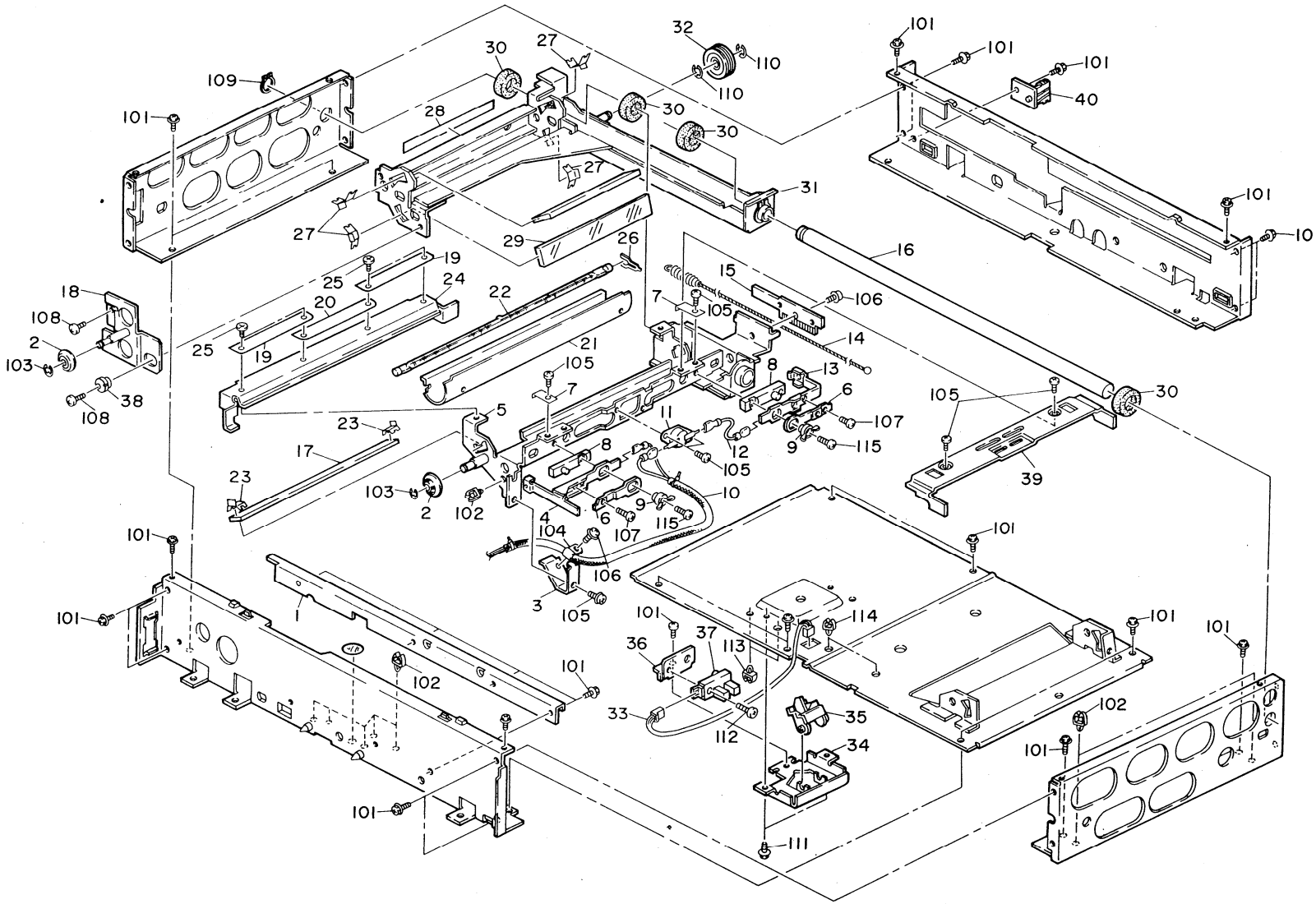
11. CLEANING

Index No.	Part No.	Description	Q'ty Pel Assembly
*	AO17 3550	Cleaning Unit	
1	A017 3656	Upper Toner Collection Casing	1
2	A017 3657	Feeler Holder	1
3	A017 3660	Lower Toner Collection Casing	1
h	A017 3611	Upper Casing - Cleaning Unit	1
5	A017 3624	Lower Casing - Cleaning Unit	1
6	A017 3645	Toner Holder	1
7	A017 3595 "	Toner Collection Roller	1
8	A017 3557	Rear Side Plate - Cleaning	1
9	A017 3602	Pick-up Pawl Rod	1
10	A017 3552	Front Side Plate - Cleaning	1
11	A017 3578	Cleaning Brush Holder	1
12	A017 3573	Pressure Arm	1
13	A017 3569	Cleaning Blade Holder	1
14	AA15 0041	Mylar Seal - 33x235	1
15	AA15 1153	Seal - 1x1OX245	1
16	AA15 2032	sea 1 - Toner Holder	1
17	AD02 5008	Pick-off Pawl	1
18	5447 2681	snap Ring	2
19	AA15 0052	Entrance Seal - Cleaning Unit	1
20	AA15 0040	seal - 11x237	1
21	AA14 0129	shaft - Cleaning Brush	1
22	AA15 1154	seal - M6x16x85	2
23	AA15 1156	seal - Rear Side Cleaning	1
24	ABO1 1030	Gear - 31T	1
25	ABOI 3200	Gear - 15Z	1
26	ABO1 3127	&?ar - 14T	1
27	5446 3707	Bushing - 6x10x6mm	2
28	AA15 l17&	seal - Blade Rear	1
29	5205 3599	side Seal - Cleaning Rear	1
30	5215 3555	Rubber Seal - Cleaning Small	2
31	AD04 2005	cleaning Brush	1
32	AA15 1155	seal - Front Side Cleaning	1
33	AA15 1173	Seal - Blade Front	1
3L	5219 1958	Spring - Lens Guide	1

Index No.	Part No.	Description	Q'ty Per Assembly
35	AA15 0039	Sea 1 - 0.1x11x244	1
36	5418 2859	Spring - Regist Roller (Front)	1
37	ABO1 7094	Gear - 14T	1
38	5205 3603	Sea 1 - Rear Outer	1
39	5442 3593	Sea 1 - Cleaning Balde Shaft	2
40	5446 3648	Stepped Screw - M4	1
41	5205 3602	Seal - Front Outer	1
42	AD04 1006	Cleaning Blade	1
43	AO05 3585	Sensor Feeler - Toner Over Flow	1
44	AO05 3586	Rubber Seal - Toner Collection	1
45	AO05 3587	Feeler Supporter	1
101	0413 O082W	Tapping Screw - M3x8	
102	0951 3008W	Philips Screw With Flat Washer - M3x8	
103	0413 0062W	Tapping Screw - M3x6	
104	0720 O025E	Retaining Ring - M2.5	
105	0720 0040E	Retaining Ring - M4	
106	0313 0060W	Philips Pan Head Screw - M3x6	
107	0314 0060W	Philips Pan Head Screw - M4x6	
108	0805 3384	Bushing - 5mm	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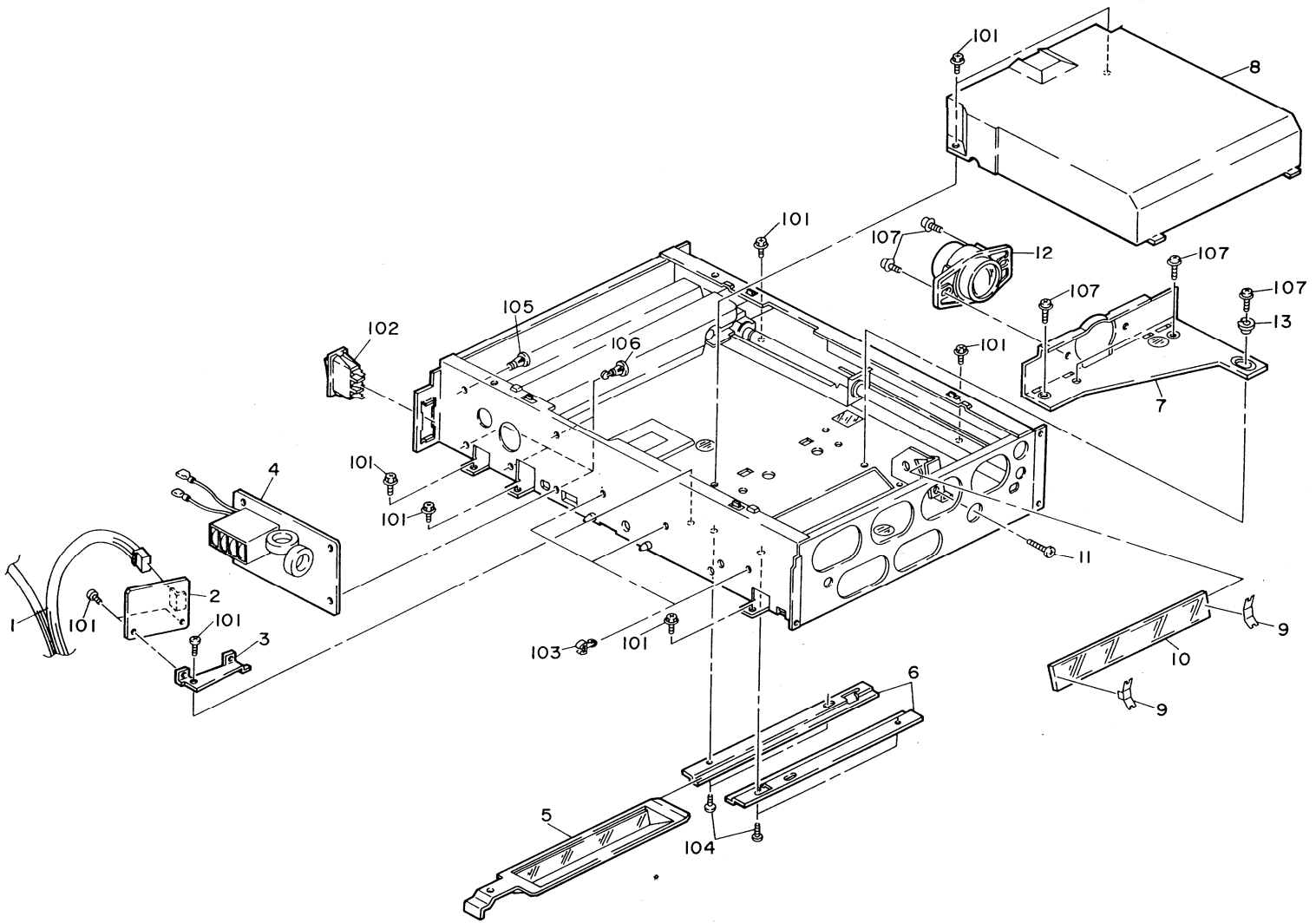
Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 1823	Scanner Guide	1
2	AO08 1704	Guide Roller - 1st Scanner	2
3	A017 5808	Scanner Wire Bracket	1
h	5442 1705	Exposure Lamp Terminal - Release	1
5	A017 1681	Ist Scanner Ass'y	1
6	5420 1682	Supporter - Lamp Terminal	2
7	5409 1705	Switch Actuator - 1st Mirror	2
8	AO07 186;	Insulator - Lamp Terminal	2
9	AO07 1868	Spacer - Lamp Terminal	2
10	AOi7 5348	Thermostat Harness	1
11	AW1l 0003	Thermostat	1
12	A017 5346	Short Thermostat Harness	1
13	5215 1700	Exposure Lamp Termianl - Fix	1
14	AA05 0028	Scanner Drive Wire	1
Is	A017 1780	Wire Stopper Plate	1
16	AC05 0004	Guide Rod	1
17	AC03 0029	1st Mirror	1
18	A017 1732	Stud Bracket	1
19	A017 1699	Side Wing	2
20	A017 1698	Center Wing	1
21	A017 1696	Main Reflector	1
22	AX53 0004	Exposure Lamp - 220/240V	1
22	AX53 0003	Exposure Lamp - l15V	1
23	5442 1711	Spring Plate - 1st Mirror	2
24	A017 1697	Reflector - AID	1
25	5442 1702	Small Screw - M3	4
26	5215 1702	Clip - Exposure Lamp	1
27	AC03 5015	Spring Plate - 2nd Mirror	4
28	A017 1735	Cushion - 2nd Scanner Ass'y	1
29	AC03 0030	2nd Mirror	2
30	5442 1748	Cleaner - Guide Rod	4
31	A017 1721	2nd Scanner Ass'y	1
32	5209 1735	Puny	1
33	A017 5309	Relay Harness - Toner Over Flow	1
34	A017 3665	Sensor Bracket	1
35	A017 3666	Shutter - Toner Over Flow Sensor	1
36	A017 5837	Photo Sensor Bracket	1
37	AW02 0014	Photo Sensor	1
38	5205 1694	Adjusting Cam - Start Lever	1
39	AO17 1694	Main Reflector Cover	1
40	A017 1790	Wire Pulley Tightener	1
101	0443 O060W	Hexagon Head Tapping Screw - M3x6	
102	1105 0230	Clamp	
103	0720 0040E	Retaining Ring - M4	
104	1105 0005	Nylon Clip - 3N	
105	0313 0040W	Philips Pan Head Screw - M3x4	
106	0951 4008W	Philips Screw With Flat Washer - MLx8	
107	0313 0120W	Philips Pan Head Screw - M3x12	
108	0314 0080W	Philips Pan Head Screw - M4x8	
109	0725 0140E	Retaining Ring C - M14	
110	0720 0070E	Retaining Ring - M7	
111	0313 0060W	Philips Pan Head Screw - M3x6	
112	0314 0120W	Philips Pan Head Screw - M4x12	
113	1105 0199	Clamp	
114	1105 0119	Clamp	
115	1313 0080W	Philips Pan Head Screw - M3x8	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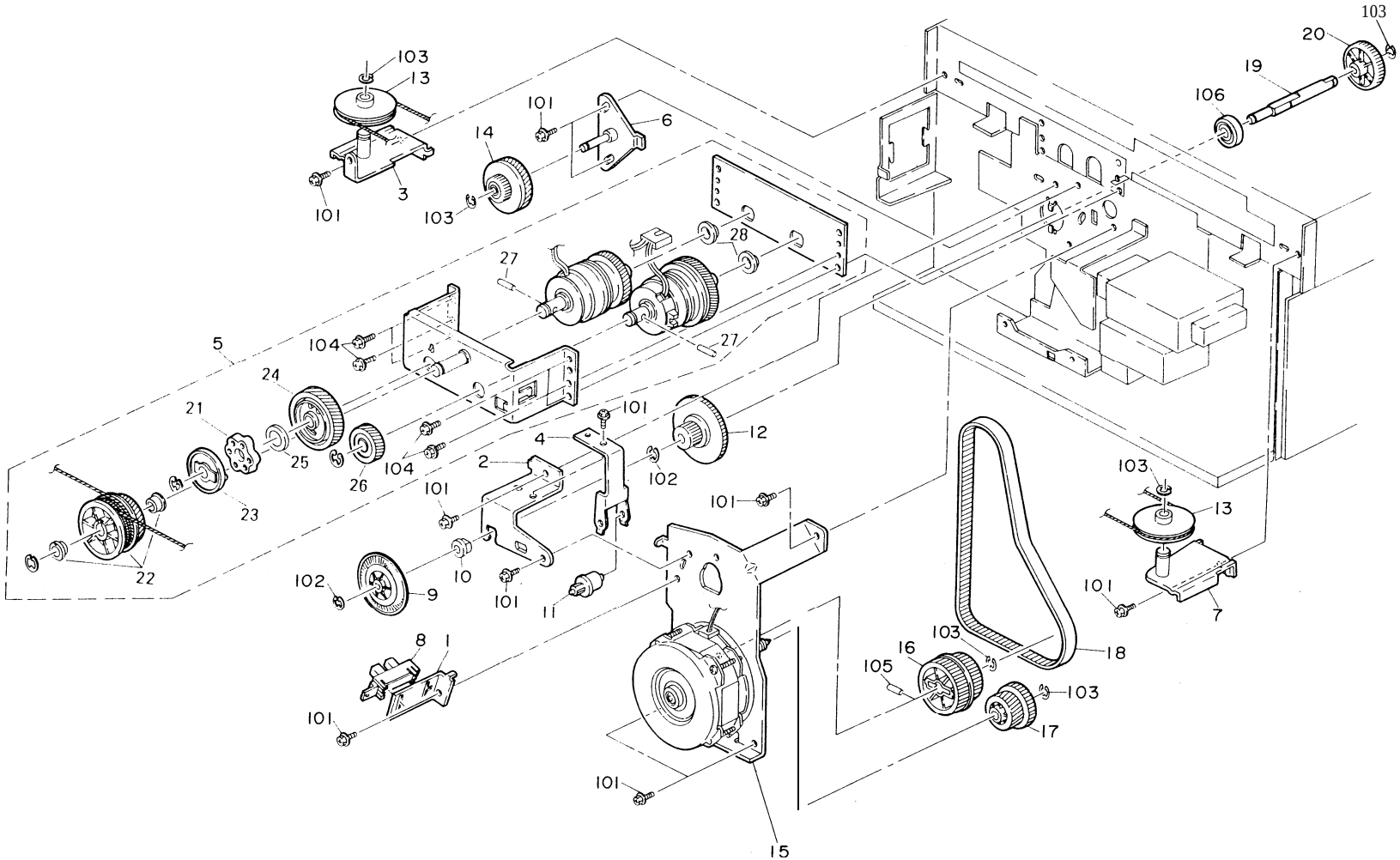
13. OPTICS 1 I

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5303	ADS Board Harness	1
2	A017 5120	ADS Board	1
3	A017 5803	ADS Board Bracket	1
h	A017 5620	Lamp Regulator - 180V-350W (220/240V)	1
4	A017 5520	Lamp Regulator - 97V-350W (115V)	1
5	A017 1771	Toner Shield Cover	1
6	A017 1770	Toner Shield Cover Rail	2
7	A017 1766	Lens Bracket	1
8	A017 1767	4th Mirror Cover	1
9	5220 1733	Spring Plate	2
10	AC03 0031	4th Mirror	1
11	AA14 3019	Mirror Adjusting Screw	1
12	AC02 0023	Lens	1
13	5205 1694	Adjusting Cam - Start Lever	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0443 O060W	Hexagon Head Tapping Screw - M3x6	
102	1204 1576	Swi tch	
103	1105 0230	Clamp	
104	0313 O060W	Philips Pan Head Screw - M3x6	
105	1105 0240	Spacer	
106	1105 0154	Clamp	
107	0951 4008W	Philips Screw With Flat Washer - M4x8	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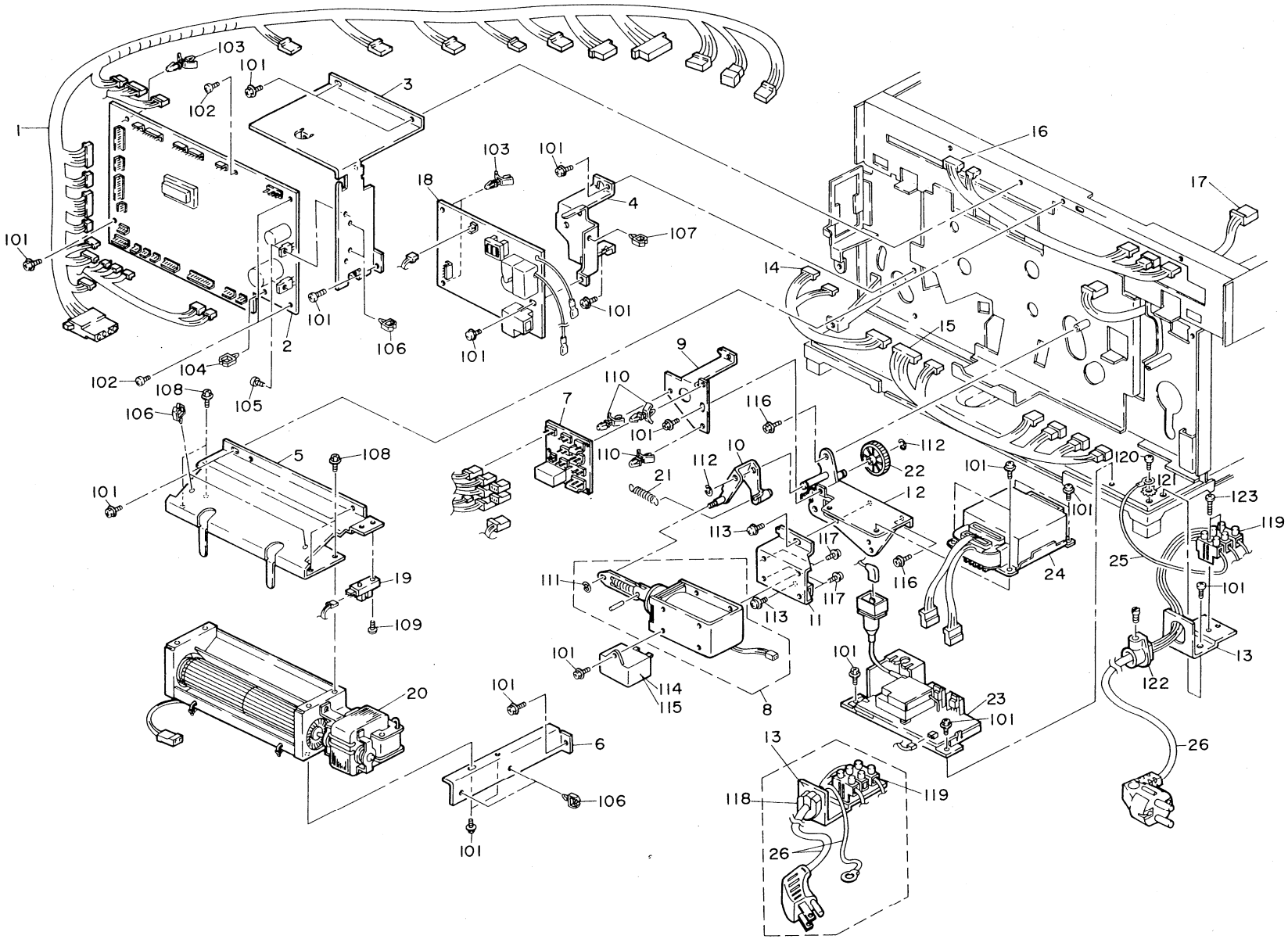
Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 1107	Sensor Bracket	1
2	A017 1121	Pulse Geverator Bracket	1
3	A017 1787	Right Pulley Bracket	1
4	A017 1102	Spring Plate	1
5	AO17 5205	Magnetic Clutch Ass'y	1
6	A017 1111	Stud	1
7	A017 178L	Left Pulley Bracket	1
8	AW02 0015"	Photo Sensor	1
9	AA1l 2001	Pulse Generator Disk	1
10	5053 04L7	Bushing - 6mm	1
11	AB03 0028	Tension Pulley	1
12	ABO1 7061	Pulley & Gear - 23T/45T	1
13	AB03 2034	Pulley	2
14	ABO1 3188	Gear - 42T	1
15	AX02 0038	Main Motor - AC19W 220/240V 50Hz	1
15	AX02 0037	Main Motor - AC19W 115V	1
15	AX02 0040	Main Motor - AC19W 220V 60Hz	1
16	ABO1 7091	Gear - 30T	1
17	ABO1 7092	Gear - 30T	1
18	AA04 3009	Timing Belt	1
19	AA14 8068	Development Drive Shaft	1
20	ABO1 3207	Gear - 40T	1
21	A017 1789	Clutch Damper	1
22	A017 5207	Drive Pulley	1
23	A017 5210	Clutch Damper Cover	1
24	AO17 5209	Gear - 48T	1
25	A017 5211	Spacer	1
26	A017 5208	Gear - 24T	1
27	A017 5212	Pin	2
28	A017 5207	Bushing	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0443 0060W	Hexagon Head Tapping Screw - M3x6	
102	0720 O040E	Retaining Ring - F-IL	
103	0720 O060E	Retaining Ring - M6	
104	0443 O080W	Hexagon Head Tapping Screw - M3x8	
105	0632 0160G	Parallel Pin 2x16	
106	0805 3104	Ball Bearing - 8x22x7mm	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15. ELECTRICAL COMPONENT

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5301	DC Harness	1
2	A017 5101	Main Board	1
3	A017 5800	Heat Sink - Main Control	1
h	A017 2695	Support Plate	1
5	A017 5810	Upper Fan Motor Bracket	1
6	A017 5811	Lower Fan Motor Bracket	1
7	A017 5540	AC Drive Board	1
8	A017 3686"	Cleaning Solenoid	1
9	A017 5835	AC Drive Board Bracket	1
10	A017 3676	Pressure Lever	1
11	A017 3688	Cleaning Solenoid Bracket	1
12	A017 3671	Bracket - Cleaning	1
13	A017 1085	Power Cord Bracket	2
14	A017 5307	Toner End Sensor Harness	1
15	A017 5335	Pulse Genalator Harness	1
16	A017 5305	Fan Motor Harness	1
17	AO17 5357	AC Harness	1
18	AZ32 0009	Power Pack - C/T/B	1
19	AW02 0014	Photo Sensor	1
20	AX62 0004	Fan Motor - 220/240V	1
20	AX62 0003	Fan Motor - 115V	1
21	AA06 0115	Release Spring	1
22	ABO1 3199	Gear - 36T	1
23	AZ31 0003	Power Pack - S	1
24	AZ12 0004	Transformer - 220/240V	1
24	AZ12 0003	Transformer - 115V	1
25	5216 5675	Grounding Wire	1
26	1150 0012	Power Supply Cord - 115V	1
26	1150 0010	Power Supply Cord - 220/240V	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0443 0060W	Hexagon Head Tapping Screw - M3x6	
102	0313 0060W	Philips Pan Head Screw - M3x6	
103	1105 0192	Locking Support	
104	1105 0230	Clamp	
105	0313 0080W	Philips Pan Head Screw - M3x8	
106	1105 0199	Clamp	
107	1105 0231	Clamp	
108	0443 O080W	Hexagon Head Tapping Screw - M3x8	
109	0314 Oloow	Philips Pan Head Screw - M4x1O	
110	1105 0194	P.C.B. Stud	
111	0720 O030E	Retaining Ring - M3	
112	0720 O040E	Retaining Ring - M4	
113	0951 4006W	Philips Screw With Flat Washer - M4x6	
114	1606 1525	Capacitor - 5μF 250V	
115	1606 1524	Capacitor - 8μF 220V	
116	0951 3006W	Philips Screw With Flat Washer - M3x6	
117	0951 3005W	Philips Screw With Flat Washer - M3x5	
118	1106 0366	Cord Clamp - 115V	
119	1101 0359	Terminal - 3P	
120	0315 O080M	Philips Pan Head Screw - M5x8	
121	0705 O050C	Toothed Washer - M5	
122	1106 0442	Cord Stopper	
123	0313 0160W	Philips Pan Head Screw - M3x16	

CONNECTOR

SYMBOL NO.	INDEX NO.
CN101	103
CN102	108
CN103	105
CN104	106
CN105	103
CN106	102
CN107	103
CN108	113
CN109	111
CN110	107

CONNECTOR

SYMBOL NO.	INDEX NO.
CN111	114
CN112	103
CN113	112
CN114	109
CN115	105
CN116	104
CN117	110
CN118	106
CN119	110

CAPACITOR

SYMBOL NO.	INDEX NO.
C101	155
C102	155
C103	155
C104	155
C105	155
C106	145
C107	155
C108	147
C109	144
C110	155

SYMBOL NO.	INDEX NO.
C111	147
C112	155
C113	155
C114	155
C115	155
C116	155
C117	155
C118	155
C119	155
C120	155

SYMBOL NO.	INDEX NO.
C121	154
C122	154
C123	155
C124	155
C125	155
C126	155
C127	153
C128	153
C129	155
C130	147

SYMBOL NO.	INDEX NO.
C131	144
C132	151
C133	152
C134	146
C135	156
C136	150
C137	149
C138	155
C139	148

DIP SW

SYMBOL NO.	INDEX NO.
DPS101	118
DPS102	119

DIODE

SYMBOL NO.	INDEX NO.
D101	127
D102	127
D103	127
D104	127
D105	127
D106	127
D107	127
D108	127
D109	127
D110	127

POTENTOMTER

YMBOL NO.	INDEX NO.
VR101	143
VR102	142

DIODE

SYMBOL NO.	INDEX NO.
ZD101	129
ZD102	128
ZD103	130
ZD104	130

SYMBOL NO.	INDEX NO.
TP102	101
TP103	101
TP104	101

DIODE

SYMBOL NO.	INDEX NO.
D111	127
D112	127
D113	127
D114	127
D115	127
D116	127
D117	127
D118	127
D119	127
D120	127

SYMBOL NO.	INDEX NO.
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D122	127
D123	127
D124	127
D125	127
D126	127
D127	127
D128	127
D129	127
D130	127

SYMBOL NO.	INDEX NO.
D131	127
D132	131
D133	127
D134	127
D135	127
D136	131
D137	131
D138	131
D139	131
D140	131

SYMBOL NO.	INDEX NO.
D141	132
D142	132
D143	131
D144	131
D145	132
D146	132
D147	131
D148	131
D149	127

OSCILLATOR

SYMBOL NO.	INDEX NO.
OSC101	139

TRANSISTOR

SYMBOL NO.	INDEX NO.
Q101	123
Q102	123
Q103	123
Q104	123
Q105	123
Q106	123
Q107	123
Q108	121
Q109	122
Q110	121

SYMBOL NO.	INDEX NO.
Q111	123
Q112	121
Q113	121
Q114	121
Q115	121
Q116	125
Q117	124

RESISTOR

SYMBOL NO.	INDEX NO.
R101	158
R102	165
R103	158
R104	165
R105	158
R106	165
R107	158
R108	165
R109	141
R110	141

SYMBOL NO.	NDEX NO.
R111	141
R112	141
R113	141
R114	141
R115	141
R116	158
R117	165
R118	158
R119	165
R120	158

FUSE

SYMBOL NO.	INDEX NO.
FU101	117
(FU101)	116
FU102	117
(FU102)	116

IC

SYMBOL NO.	NDEX NO.
IC101	126
IC102	134
IC103	133
IC104	137
(IC104)	1
(IC104)	115
IC105	136
IC106	135
IC107	135
IC108	134
IC109	138

RESISTOR

SYMBOL NO.	NDEX NO.
R121	165
R123	162
R124	162
R125	162
R126	162
R127	162
R128	162
R129	162
R130	162

SYMBOL NO.	NDEX NO.
R131	162
R132	162
R133	162
R134	162
R135	162
R136	162
R137	162
R138	162
R139	162
R140	162

SYMBOL NO.	INDEX NO.
R141	162
R142	169
R143	162
R144	166
R145	158
R146	157
R147	159
R148	169
R149	159
R150	163

SYMBOL NO.	INDEX NO.
R151	158
R152	161
R153	158
R154	168
R155	169
R156	169
R157	169
R158	169
R159	166
R160	169

SYMBOL NO.	INDEX NO.
R161	169
R162	166
R163	166
R164	166
R165	166
R166	167
R167	167
R168	167
R169	167
R170	166

SYMBOL NO.	INDEX NO.
R171	169
R172	159
R173	172
R174	174
R175	171
R176	166
R177	166
R178	173
R179	160
R180	159

SYMBOL NO.	INDEX NO.
R181	169
R182	169
R183	158
R184	169
R185	158
R186	170
R187	157
R188	158
R189	170
R190	170

SYMBOL NO.	INDEX NO.
R191	167
R192	169
R193	159
R194	169
R195	169
R196	169
R197	166
R198	166
R199	166
R200	169

SYMBOL NO.	INDEX NO.
R202	169
R203	164
R204	140
R205	167

16. MAIN BOARD

Index No.	Part No.	Description	Q'ty Per Assembly
*	A017 5101	Main Board	1
1	A017 5104	IC - UPD 27C 256A	1
101	1101 0328	Conne o Pin Contact	
102	1103 0441	Connector - 3P	
103	1103 1768	Connector - 2P	
104	1103 1769	Pin Header - 3P	
105	1103 1770	Wafer - 4P	
106	1103 1771	Connector - 5P	
107	1103 1772	Pin Header - 6P	
108	1103 1773	Pin Header - 7P	
109	1103 1777	Pin Header - 11P	
110	1103 1778	Pin Header - 12P	
111	1103 1779	Pin Header - 13P	
112	1103 1782	Pin Header - 2P	
113	1103 1783	Connector - 3P	
114	1103 1796	Pin Header - 2P	
115	1104 0339	IC - C5W64-11	
116	1104 0351	Fuse Holder	
117	1107 0390	Fuse - 4A	
118	1204 1574	DIP Switch - 6P	
119	1204 1575	DIP Switch - 4P	
121	1400 0072	Transistor - 2SC372Y	
122	1400 0135	Transistor - 25AS1015-Y	
123	1400 0347	Transistor - 2SB101O-Q	
124	1401 0257	Transistor - 2SC2315	
125	1401 0266	Transistor - 2SD1260	
126	1401 0332	Transistor Array - TD62083AP	
127	1401 0815	Diode - 1S1588:IR	
128	1402 0524	Diode - MA1047-L	
129	1402 0771	Diode - MA1036-L	
130	1402 0779	Diode - HZ12A-2	
131	1402 0780	Diode - 11ES2	
132	1402 0781	Diode - R02Z	
133	1407 0972	IC - HD74LS42P	
134	1407 0975	IC - HD7407P	
135	1407 1348	IC - TD62304P	
136	1407 1789	IC - MPC393C	
137	1407 2567	IC - MPD78CG14E	
138	1408 0638	IC - NJM7805FA	
139	1503 0070	Ceramic Oscillator - IOMHz	

Index No.	Part No.	Description	Q'ty Per Assembly
140	1600 1096	Resistor - IKQ IT 15%	
141	1600 1182	Resistor - 240Q 2T *5%	
142	1601 8396	Variable Resistor - lKQ	
143	1601 8446	Resistor - 300KQ 0.3T f5%	
144	1604 1354	Capacitor - 100PF 10V	
145	1604 1357	Capacitor - 470PF 10V	
146	1604 1372	Capacitor - 2200PF 25V	
147	1604 1378"	Capacitor - IPF 50V	
148	1604 1381	Capacitor - 4.7PF 50V	
149	1604 1382	Capacitor - 10PF 50V	
150	1604 1385	Capacitor - 47PF 120% 50V	
151	1604 1387	Capacitor - 220PF 50V	
152	1604 1900	Capacitor - 4700AF 50V	
153	1606 0996	Capacitor - 470PF 25V	
154	1606 1184	Capacitor - 27PF 50V	
155	1606 1336	Capac! tor - 1000PF 50V	
156	1606 1352	Capacitor - O.lPF 50V	
157	1611 4100	Resistor - 10Q l/4W	
158	1611 4102	Resistor - IKQ l/4T 55%	
159	1611 4103	Resistor - 10KQ l/4T *5%	
160"	1611 4105	Resistor - IKQ l/4T 15%	
161	1611 4106	Resistor - 10MQ l/4T *5%	
162	1611 4123	Resistor - 12KQ l/4T *5%	
163	1611 4152	Resistor - 1.5KQ l/4T *5%	
164	1611 4181	Resistor - 180Q l/4T f5%	
165	1611 4222	Resistor - 2.2KQ I14T *5%	
166	1611 4223	Resistor - 22KQ l/4T *5%	
167	1611 4302	Resistor - 3.OKQ l/4T *5%	
168	1611 4393	Resistor - 39KQ l/4T *5%	
169	1611 4472	Resistor 4.7KQ l/4T *5%	
170	1611 4473	Resistor - 47KQ l/4T *5%	
171	1611 4475	Resistor - 4.7KQ l/4T *5%	
172	1622 1151	Resistor - 1.15KQ l/4T +1%	
173	1622 1301	Resistor - 1.3KQ l/4T flO%	
174	1622 2741	Resistor - 2.74KQ l/4T *1%	

Index No.	Part No.	Description	Q'ty Per Assembly

17. AC DRIVE BOARD

RA

SYMBOL NO.	INDEX NO.
RA601	107

CONNECTOR

SYMBOL NO.	INDEX NO.
CN601	106
CN602	105
CN603	105
CN604	105
CN605	105
CN606	103
CN606	104
CN607	103
CN607	104
CN608	101

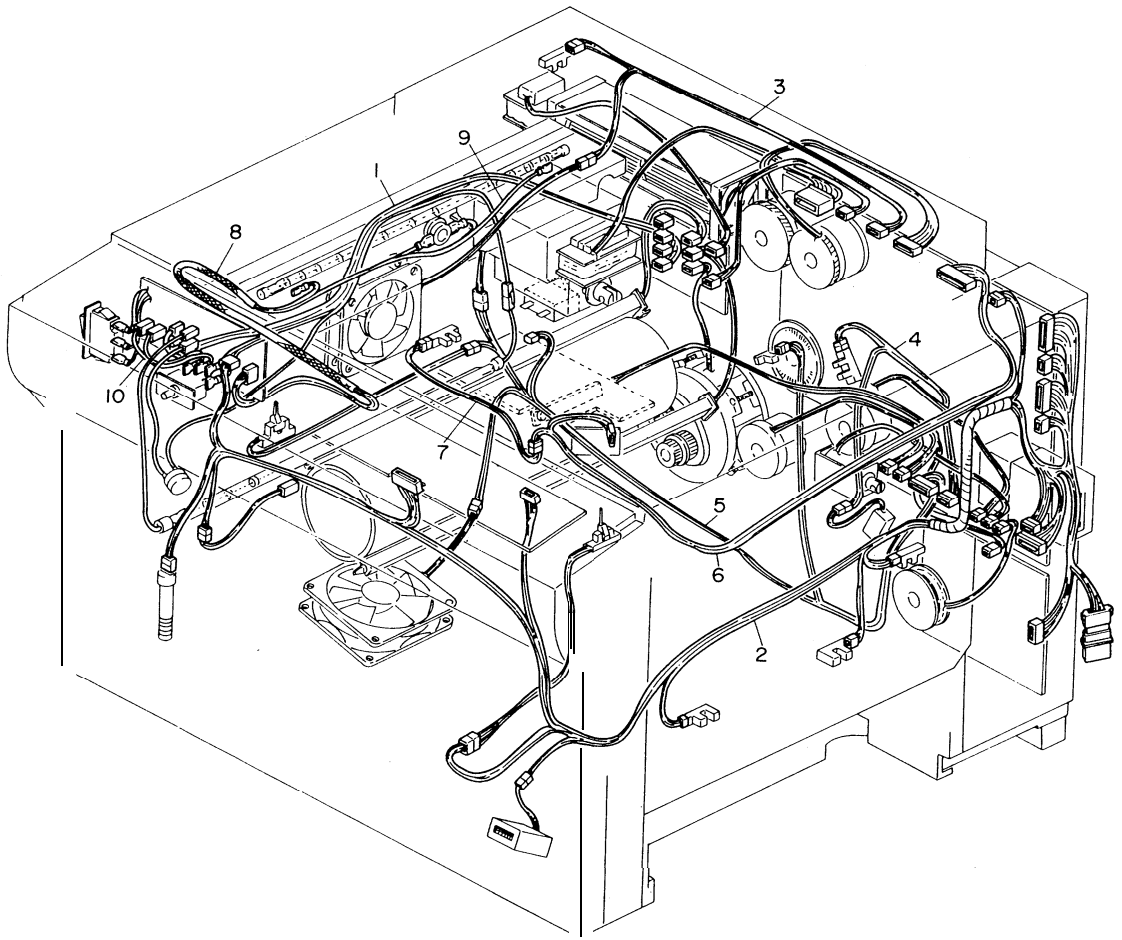
SYMBOL NO.	INDEX NO.
CN609	102

17. AC DRIVE BOARD

irl Px No	Part No.	Description	Q'ty Per Assembly
*	A017 5541	AC Drive Board	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 0484	Connector - 3P	
102	1102 0959	Terminal - 3P	
103	1102 3601	Connector - 2P	
104	1102 3601	Connector - 2P	
105	1103 1446	Connector - 2P	
106	1103 1768	Connector - 2P	
107	1208 1166	Relay - DC24V	

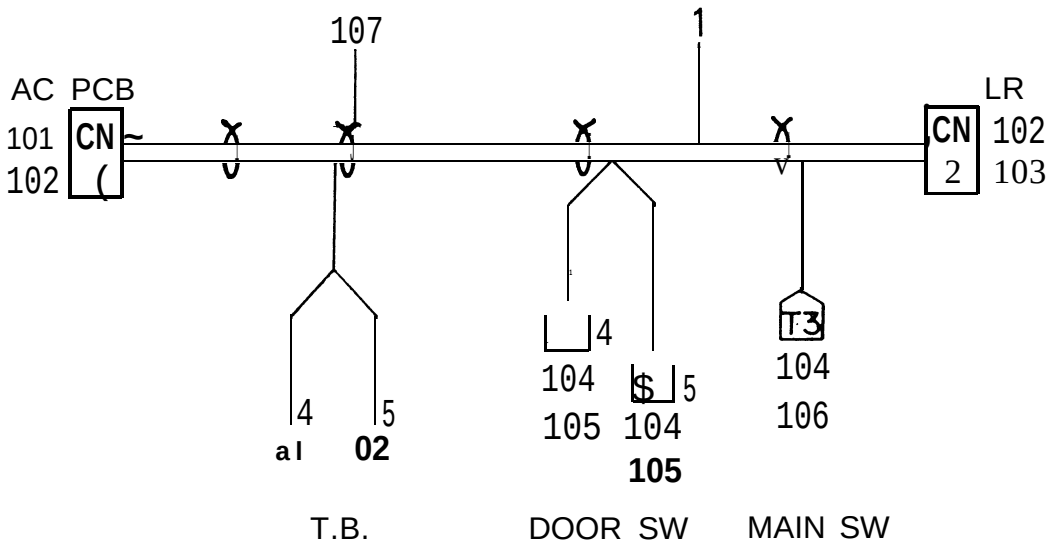
18. HARNESS LAYOUT



18. HARNESS LAYOUT

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5357	AC Harness	1
2	A017 5301	DC Harness	1
3	A017 5305	Fan Motor Harness	1
4	A017 5307	Toner End Sensor Harness	1
5	A017 5335	Pulse Genarator Harness	1
6	A017 5303	Original ID Sensor Harness	1
7	A017 5309	Relay Harness - Toner Overflow	1
8	A017 5348	Thermoswitch Harness	1
9	A017 5346	Short Thermoswitch Harness	1
10	A017 5355	Safety Switch Harness	1

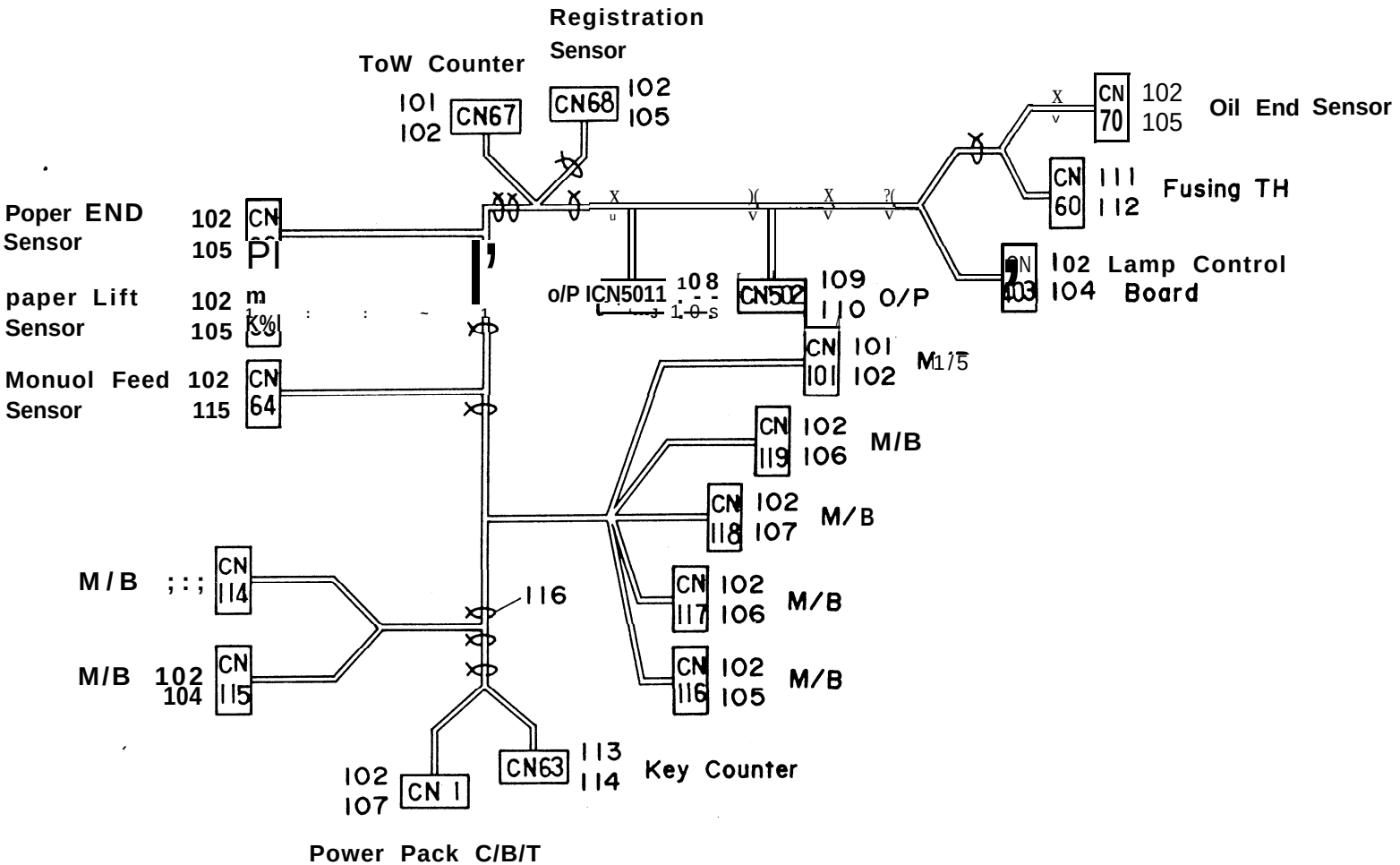
Index No.	Part No.	Description	Q'ty Per Assembly


107
1
AC PCB
101
102
CN
LR
CN
102
103
4
5
104
105
104
105
T3
104
106
T.B.
DOOR SW
MAIN SW

19. AC HARNESS

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5357	AC Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 2385	Close Terminal	
102	1100 1247	Terminal	
103	1102 1822	Closed Terminal	
104	1102 0717	Closed Terminal	
105	1100 0285	Fastening Receptacle	
106	1100 0270	Fastening Receptacle	
107	1105 0046	TY - Wrap	

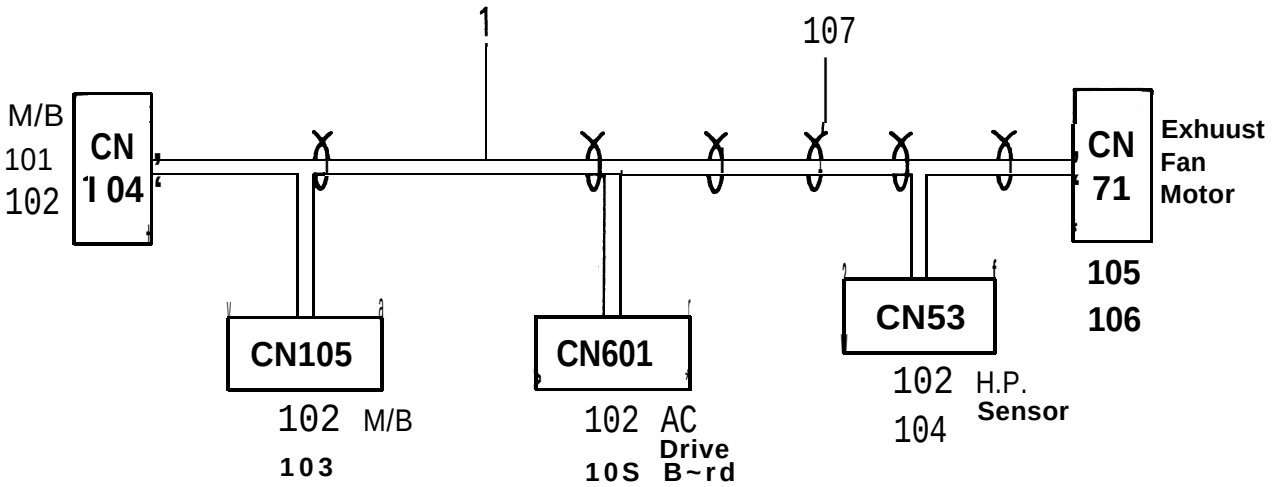

Registration
Sensor
ToW Counter
101
102
CN67
CN68
102
105
CN
70
102
105
Oil End Sensor
CN
60
111
112
Fusing TH
Poper END
Sensor
102
105
paper Lift
Sensor
102
105
Monuol Feed
Sensor
102
115
CN
64
o/P
108
109
110
O/P
CN
101
102
M175
CN
119
102
106
M/B
CN
118
102
107
M/B
CN
117
102
106
M/B
CN
116
102
105
M/B
M/B
CN
114
M/B
102
104
CN
115
116
102
107
CN 1
CN63
113
114
Key Counter
Power Pack C/B/T

20: DC HARNESS

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5301	DC Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 1982	Socket Housing -2P	
102	1100 1329	Socket Contact	
103	1102 1991	Socket Housing -11P	
104	1102 1984	Socket Housing -4P	
105	1102 1983	Socket Housing -3P	
106	1102 1992	Socket Housing -12P	
107	1102 1985	Socket Housing -5P	
108	1102 3603	Socket Housing	
109	1100 1204	Socket - Mate-N-Lock	
110	1102 3602	Socket Housing	
111	1102 2024	Pin Housing -2P	
112	1100 1330	Socket Contact	
113	1102 0185	Connector -4P	
114	1100 0844	Socket - Mate-N-Lock	
115	1102 1997	Connector -3P	
116	1105 0046	TY- Wrap	
117	1004 0069	Insulating Tape -120mm	

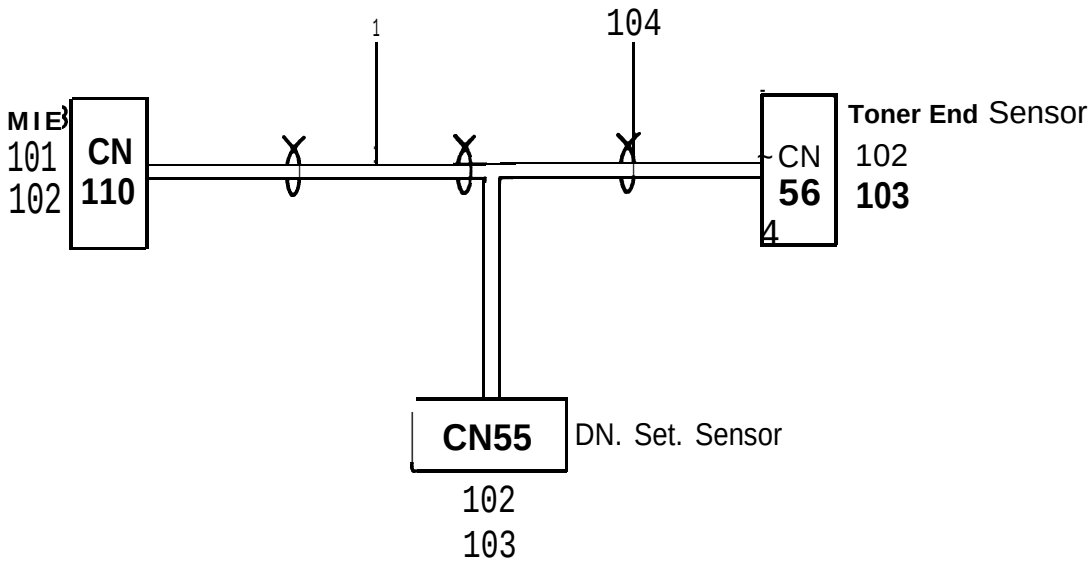
21. FAN MOTOR HARNESS



21. FAN MOTOR HARNESS

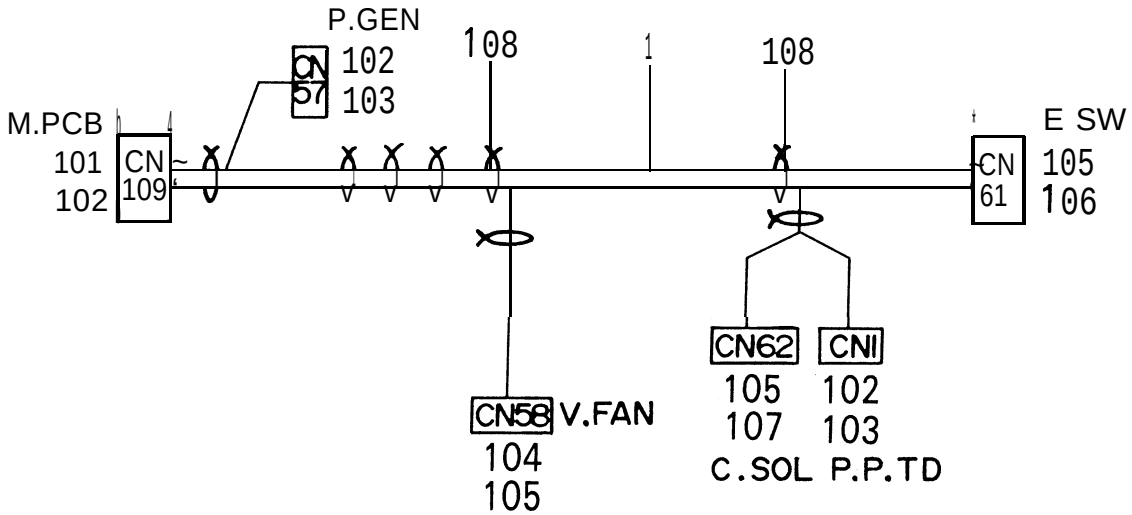
Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5305	Fan Motor Harness	1
101	1102 1985	Socket Housing - 5P	
102	1100 1329	Socket Contact	
103	1102 1982	Socket Housing - 2P	
104	1102 1983	Socket Housing - 3P	
105	1102 2024	Pin Housing - 2P	
106	1100 1330	Socket Contact	
107	1105 0046	N Wrap	

22. TONER END SENSOR HARNESS



22. TONER END SENSOR HARNESS

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5307	Toner End Sensor Harness	1
101	1102 1986	Socket Housing – 6P	
102	1100 1329	Socket Contact	
103	1102 1983	;ocket Housing – 3P	
104	1105 0046	ry - Wrap	

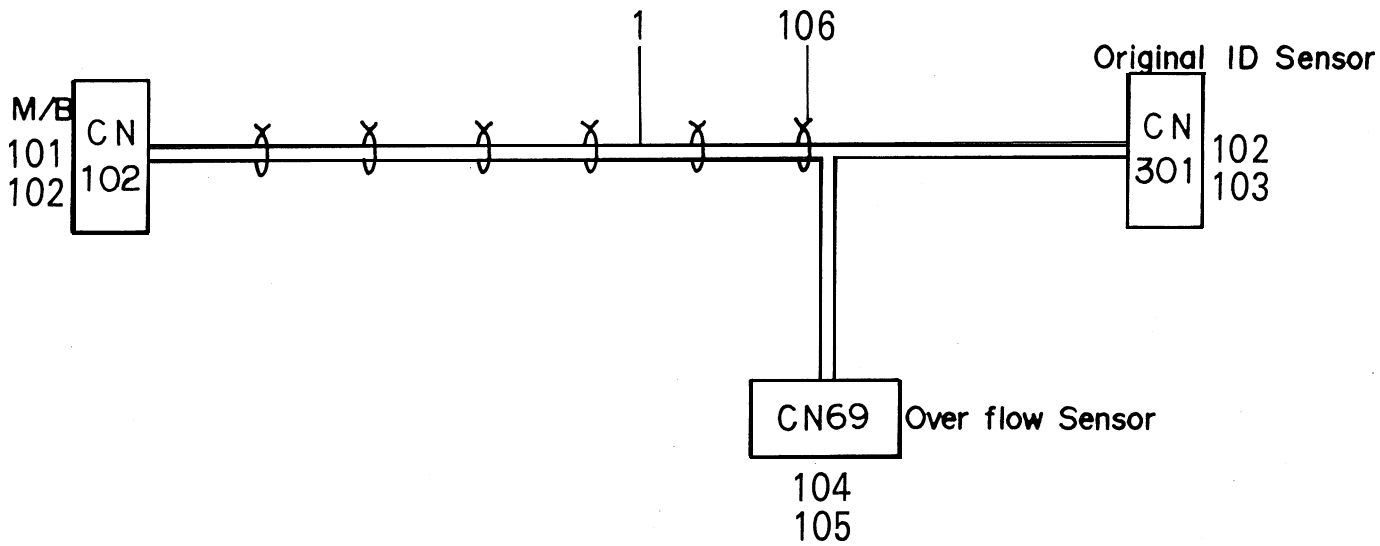

P.GEN
CN 57
102
103
108
108
M.PCB
101
102
CN 109
E SW
CN 61
105
106
CN58 V.FAN
104
105
CN62
CNI
105
107
102
103
C.SOL P.P.TD

23. PULSE GENERATOR HARNESS

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5335	Pulse Genarator Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 1993	Socket Housing - 13P	
102	1100 1329	Socket Contact	
103	1102 1983	Socket Housing - 3P	
104	1102 2024	Pin Housing - 2P	
105	1100 1330	Socket Contact	
106	1102 2025	Pin Housing - 3P	
107	1102 2031	Pin Housing - 2P	
108	1105 0046	TY -Wrap	

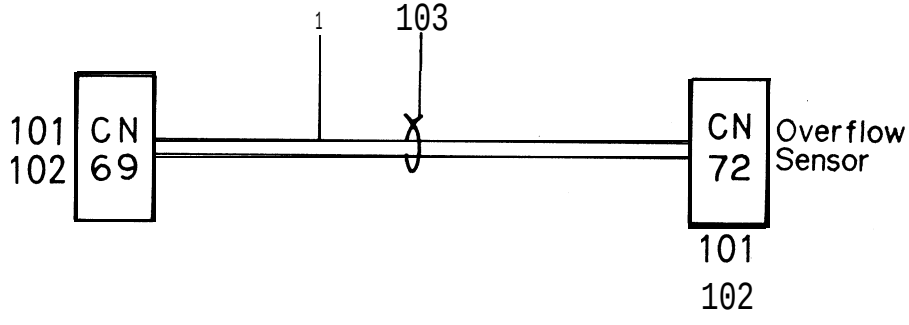
24. ORIGINAL ID SENSOR HARNESS



24. ORIGINAL ID SENSOR HARNESS

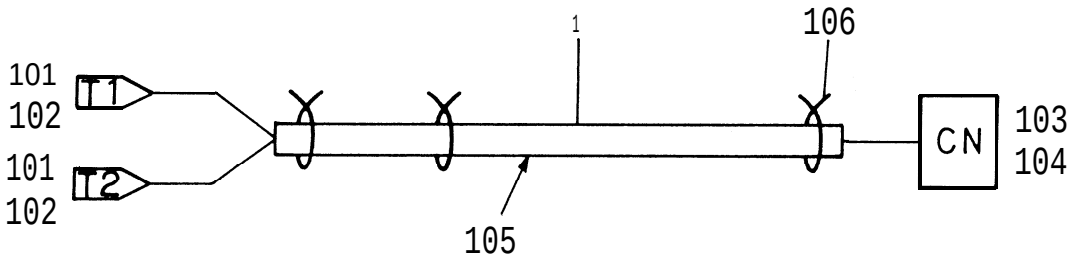
Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5303	Original ID Sensor Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 1987	Pin Housing - Mate-N-Lock - 6P	
102	1100 1329	Socket Cent'act	
103	1102 1984	Socket Housing - 4P	
104	1102 2046	Connector - 3P	
105	1100 1330	Socket Contact	
106	1105 0046	TY - Wrap	


1
103
101
102
CN
69
CN
72
Overflow
Sensor
101
102

25. RELAY HARNESS–TONER OVERFLOW

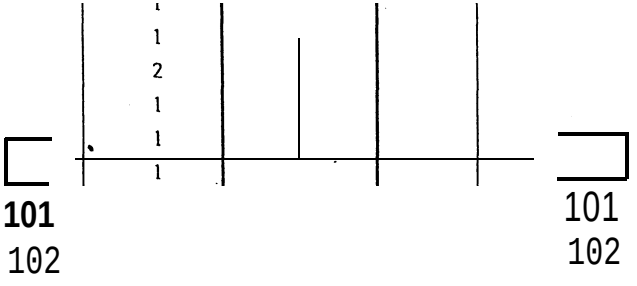
Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5309	Relay Harness - Toner Overflow	1
101	1102 1983	Socket Housing - 3P	
102	1100 1329	Socket Contact	
103	1105 0046	T Y Wrap	


101
102
T1
101
102
T2
1
106
CN
103
104
105

26. THERMO SWITCH–HARNESS

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5348	Thermoswitch Harness	1
101	1102 0692	Insulating Sleeve	
102	1100 0285	Fastening Receptacle	
103	1102 1823	Conector - 2P	
104	1100 1247	Terminal	
10s	1106 0530	Sleeve EXP-6-PT	
106	1105 0046	TY - Wrap	

27. SHORT THERMO SWITCH HARNESS

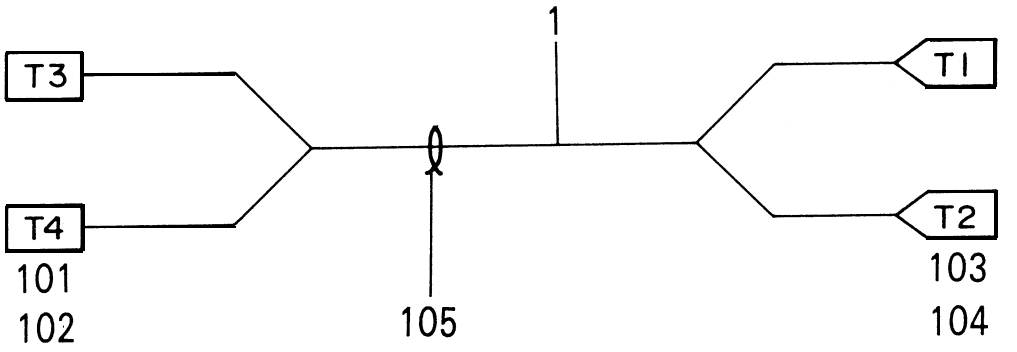


27. SHORT THERMO SWITCH HARNESS

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 5346	Short Thermoswitch Harness	1

Index. No.	Part No.	Description	Q'ty Per Assembly
101	1102 0692	Insulating Sleeve	
102	1100 0285	Fastening Receptacle	

28. SAFETY SWITCH HARNESS

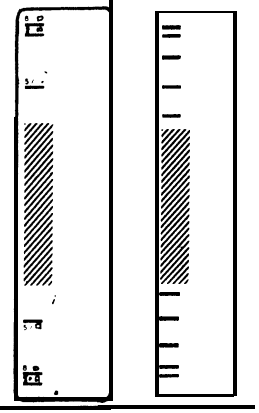


28. SAFETY SWITCH HARNESS

Index No.	Part No.	Description	Q'ty Per Assembly
	A017 5355	Safety Switch Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 1404	Receptacle Housing	
102	1100 1171	Fastening Receptacle	
103	1102 0717	Closed Terminal	
104	1100 0285	Fastening Receptacle	
105	1105 0046	TY - Wrap	

1



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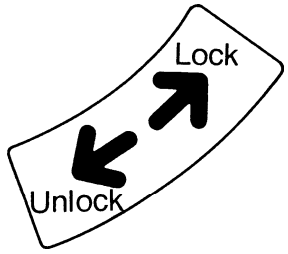
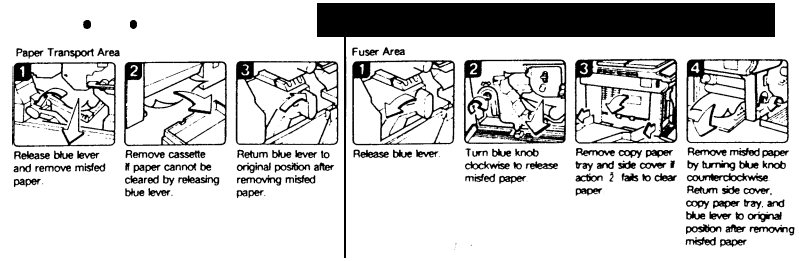
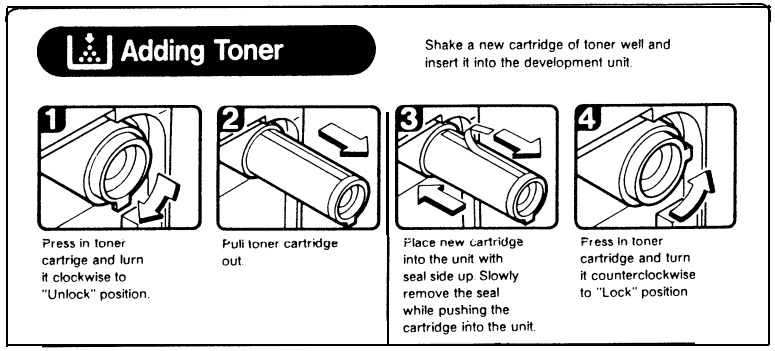


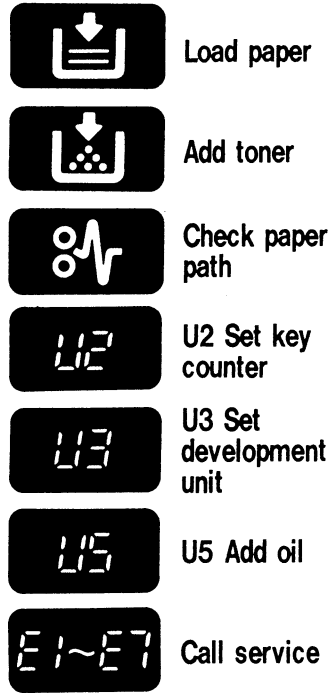
3


Paper Transport Area
Release blue lever and remove misfed paper.
Remove cassette if paper cannot be cleared by releasing blue lever.
Return blue lever to original position after removing misfed paper.
Fuser Area
Release blue lever.
Turn blue knob clockwise to release misfed paper
Remove copy paper tray and side cover if action 2 fails to clear paper
Remove misfed paper by turning blue knob counterclockwise
Return side cover, copy paper tray, and blue lever to original position after removing misfed paper

4


Adding Toner
Shake a new cartridge of toner well and insert it into the development unit.
Press in toner cartrige and turn it clockwise to "Unlock" position.
Pull toner cartridge out.
Place new cartridge into the unit with seal side up. Slowly remove the seal while pushing the cartridge into the unit.
Press in toner cartridge and turn it counterclockwise to "Lock" position

5

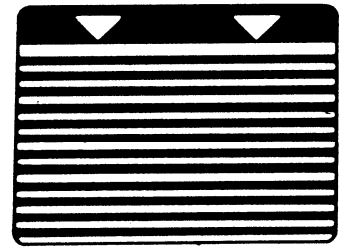


6

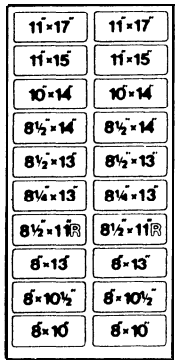
7

Attention : This machine is set for 220V/50Hz.
Achtung : Dieses Gerät ist auf 220V/50Hz eingestellt.

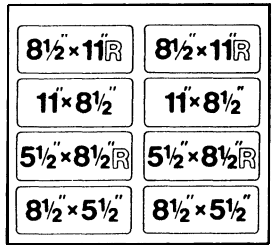
8



9



10



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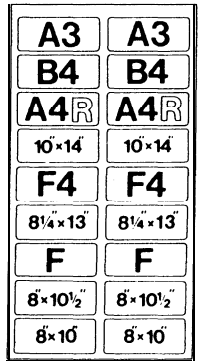

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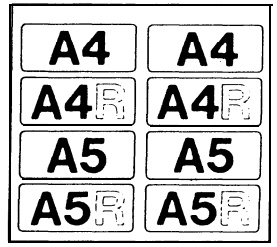
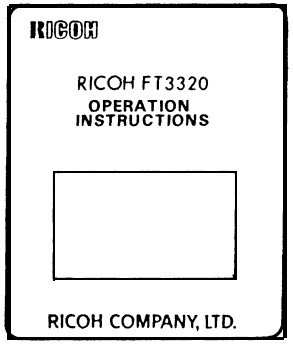


13



14

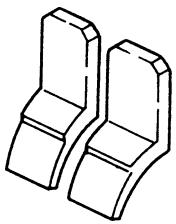
29. DECAL AND DOCUMENT

Index No.	Part No.	Description	Q'ty Per Assembly
1	A017 4971	Deca 1 - Manual Feed - A3/A4	1
1	A017 4972	Deca 1 - Manual Feed - LT/LDG	1
2	A017 4976	Deca 1 - Toner Cartridge	1
3	A017 4990	Deca 1 - Clear Misfeeds	1
4	A017 4981	Deca 1 - Adding Toner	1
5	A017 4982	Decal - Indicator	1
6	AA00 0015	Decal - High Temperature	1
7	541L2 1372	Decal - Power Source - 220V	1
8	AA00 2010	Deca 1 - Paper Level	1
9	AA00 2017	Decal Sheet - Large - LT/LDG	1
10	AA00 2015	Decal Sheet - Small - LT/LDG	1
11	AA00 2016	Decal Sheet - Large - A3/A4	1
12	AA00 2018	Decal Sheet - Small - A3/A4	1
13	A017 8600	Dperating Instructions - English	1
13	A017 8605	Dperating Instructions - 5 Languages	1
14	A017 8610	Iinstallation Procedure - English	1
14	A017 8615	Installation Procedure - 5 Languages	1
*	A017 4994	Decal Sheet Set - German	1
*	A017 4995	Decal Sheet Set - French	1
*	A017 4996	D)ecal Sheet Set - Italian	1
*	A017 4997	Decal Sheet Set - Spanish	1

Index No.	Part No.	Description	Q'ty Per Assembly

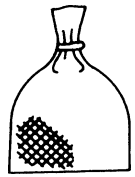
30. SPECIAL TOOL

1

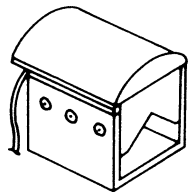


2

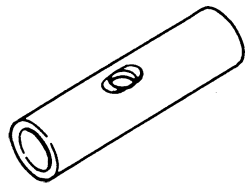
3



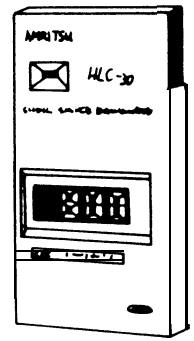
4



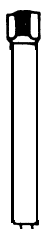
5



6



7



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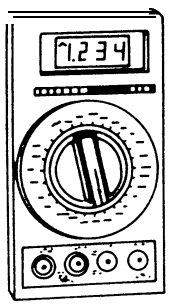


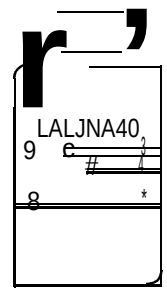
9

10

11

TEST CHART OS-A4

12



30. SPECIAL TOOL

de No	Part No.	Description	Q'ty Per Assembly
	A017 9505	IdG Gauge (2pcs/set)	1
2	5203 9501	Grease 501	1
3	5442 9101	Setting Powder	1
4	5442 9106	Drum Shoe	1
5	5LL7 9104	Shoe Adaptor	1
6	5420 9504	Thermo Meter - HLC60-E	1
	5420 9505.	Probe - HLC60-E	1
8	5420 9507	Digital Multimeter - BECKMAN-RMS3030	1
9	5420 9550	Silicone Oil	1
0	5447 9078	Heat Resisting Grease MT-78	1
	5214 9500	Test Chart - OS-A4 (lOpcs/set)	1
	5214 9501	Test Chart – OS–A4 (100pcs/set)	1
2	5L42 9103	.auna Oil	1

Index Nos	Part No.	Description	Q'ty Per Assembly

PARTS INDEX

Parts No.	Description	Page and Index No.
A017 1085	Power Cord Bracket	31-13
A017 1086	Edge Cover - 256mm	3-15
A017 1087	Edge Cover - 201mm	3-17
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1611 4473	Resistor - 47KΩ 1/4T ±5%	33-170
1611 4475	Resistor - 4.7KΩ 1/4T ±5%	33-171
1622 1151	Resistor - 1.15KΩ 1/4T ±1%	33-172
1622 1301	Resistor - 1.3KΩ 1/4T ±10%	33-173
1622 2741	Resistor - 2.74KΩ 1/4T ±1%	33-174

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